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AMERICAN
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MARCH 1974



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AMERICAN aircraft modeler

VOLUME 78, NUMBER 3

MARCH 1974

COVER PHOTO

What might at first appear to be a diorama in plastic is actually a full-size dope and fabric Spad, upended by one of Cole Palen's crew at Rhinebeck, unintentionally or otherwise. (Cover photo by Dick King)

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EDWARD C. SWEENEY, JR.
Editor and Publisher

PATRICK H. POTEKA
Assistant Editor

KELLY M. MATTHEWS
Art/Production Director

ERIC W. MEYERS
Products Editor/Staff Photographer

JEANNE M. SCHINTO
Copy Editor

Contributing Editors

DON BERLINER

JOHN BLUM

BILL BOSS

JOHN BURKAM

PATTI GROVES

DON JEHLIK

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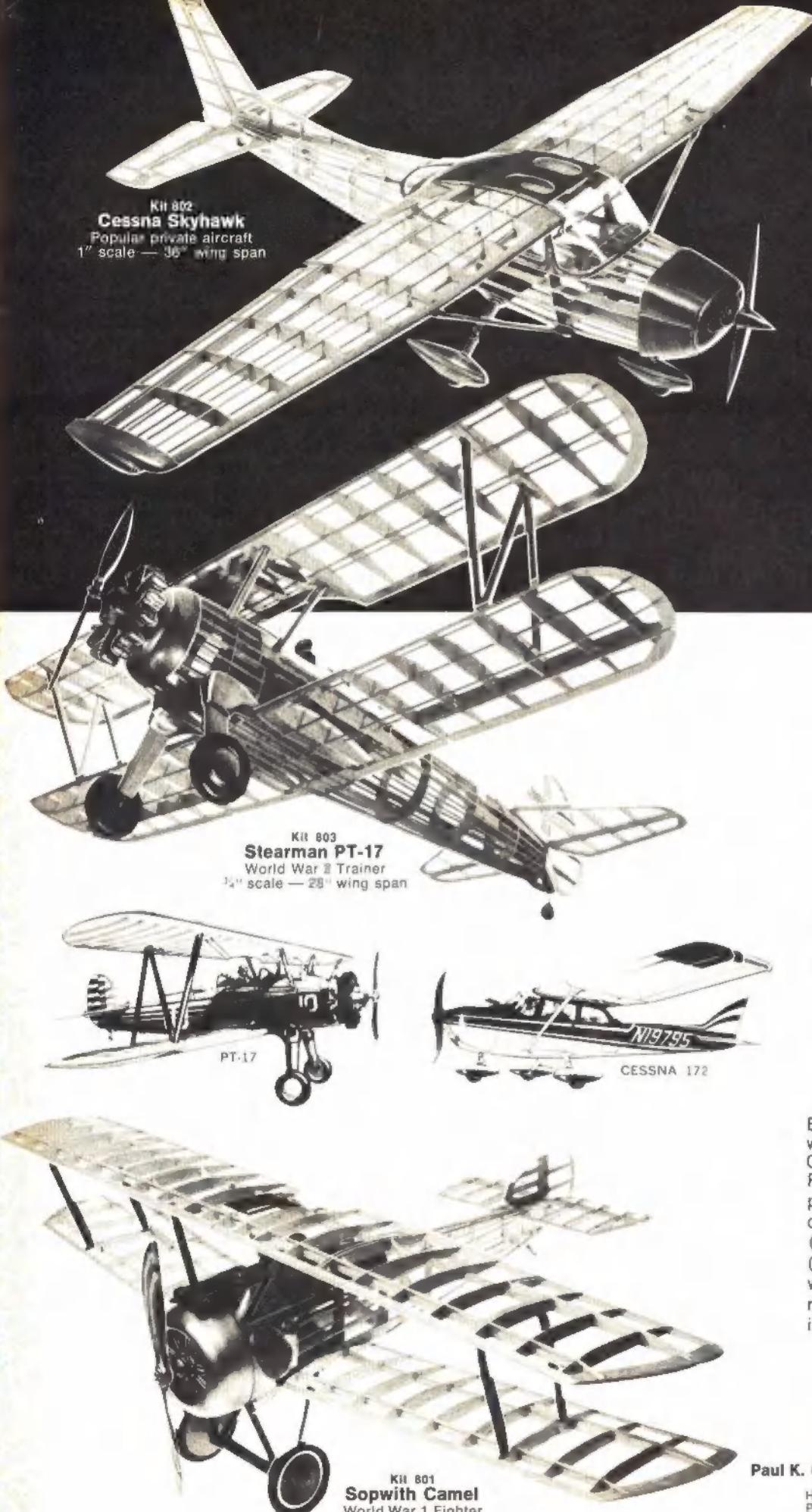
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Assistant Business Manager

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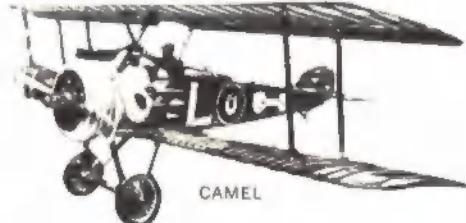
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Guest Editorial

WHAT MAKES A GOOD RC PILOT?

BOB ISAACKS

Editor's Note: Bob Isaacks is editor of the Raleigh/Durham Radio Control Club Newsletter, and immediate past president of RDRC. Bob is an ardent RC Pattern competitor, and his son, Bob Jr., is an active FF competitor. The following commentary is an excerpt from the July 1973 RDRC Newsletter in which a discussion on "what makes a good model pilot" appeared.

What makes a good model pilot? What is the mysterious factor that causes certain people to have the mind and hand coordination necessary for success, while others never seem to develop the knack? This is a topic worthy of discussion. Certainly, a variety of opinions will be voiced to provide an answer to this interesting question.

Basically, a good model pilot exhibits an attitude of sportsmanship and safety consciousness. Use of frequency pins, directing prop blast away from others, observing the AMA safety rules, and keeping noise at an acceptable level are a few of the normal activities of a good model pilot. Beyond that, a good model pilot exhibits a degree of skill when flying his aircraft. A good model pilot flies the airplane and never lets the airplane fly him.

The characteristics of a good model pilot are numerous, but here are a few of my observations which are applicable to such an individual.

(1) A good RC pilot can turn his aircraft in either direction (right or left) with equal skill. If that sounds strange, watch the fellows who fly themselves into trouble. It's a good bet that they have developed the habit of always turning in the same direction. Sooner or later, wind direction changes. The sun or a tree will get in the way of the "one way" pilot.

(Continued on page 95)

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Paul Harvey Views

FUN AND GAMES AT HOME

Christmas 1973 retail sales set records. The makers and sellers of toys and games and home-hobby equipment never had a bigger year.

Economic question marks softened sales of vehicles; Americans are rediscovering fun and games at home!

Atlanta sociologist Dr. Fred Crawford is director of Emory University's Center for Research in Social Change. He says the energy crisis is the best thing that could happen to reestablish the American family.

Of other ramifications he's not so optimistic; they'll include the greatest social change, industrial displacement and relocation which our nation has ever experienced in peacetime.

But, if there is a redeeming effect, this deprivation should strengthen American family life.

Johnny Clemens is President of the Academy of Model Aeronautics. Christmas 1973 our nation's 2500 hobby shops moved a record volume of merchandise. Clemens' AMA represents 50,000 builders and fliers of miniature aircraft—many of which are now equipped with sophisticated radio controls.

The average age of these miniature aircraft modelers is 36 years!

During a recent illness, Clemens, pondering this paradox, asked himself, "What ever happened to the kids?"

He came to the conclusion that during the 50s and since, "They rediscovered the wheel."

The lure of distant horizons is ever-

(Continued on page 97)



Modeler Mail

Compound Escapements Have Escaped Him

During a period of enforced idleness, I am building model airplanes again although bedridden with two broken femurs and other broken bones (plane crash), plus other injuries too numerous to mention here.

Having always been interested in radio control, I purchased from Ace an MRC-Futaba F-66 radio control system. It is a single-channel, tone transmitter, relayless receiver and escapement at 27.145. This set is currently installed in a 36-in. free flight by Dumas, the Sioux. However, since I'm still in the hospital I haven't flown it yet.

My question is this. Where can I find a compound escapement or even single escapement? If memory serves me correctly, Howard T. Bonner in California used to manufacture compound escapements, but I can't find his advertisement anywhere. I'd like to build other more complex airplanes using this same receiver, batt pack (34), and transmitter, but can't find anyone making escapements. Please send info and/or name and address of someone who can help me. How about schematics for digital propo?

T. D. Flint
Memorial Hospital of Sheridan Co.
1201 W. 5th St.,
Sheridan, Wyo. 82801

Those Were The Days

My father must be what you call an old timer. That's all he ever talks about: The good old days of Free Flight—were they really that great? He has photos of some he built 30 years ago: Comet Clippers and Zippers, Buccaneers and Spooks powered by Ohlssons, Browns, Denny-mites, Cyclones and a motor he used to help make years ago (Madwell) which was located in Oakland, California. He ran a lathe and made the threads on the crankcase covers, and, I think, cut the fins in the cylinder. He says when he was a kid it was much more fun to spend the evening with buddies building and breaking in their engines than running the streets. I would sure like to

have been a part of that period in model airplanes. He teaches me and six other kids the right way to build, and the proper way to break in an engine. He preaches lots of castor oil and filters. He says the new engines are fine, but you should have seen and heard the ignition jobs. Compared to the glow engines we have now, we wouldn't believe it unless we heard it. Some of the guys kid him saying, "Why don't you get one and show us?" He rather sadly says he gave them away years ago when we started coming along.

My dad is now disabled, and gives most of his time to us and our models. It would sure cheer him up, and probably bring a tear to his eye, if he could prove to the kids what he talks about all the time. The seven of us have saved some money and would like to surprise him if somebody out there has one they would sell. If not, at least we know we tried to repay him for possibly keeping some of us out of trouble. And he'd get a boot out of seeing this in your magazine—which he buys every month.

Richard Allen
1024 Azalea Drive
Alameda, Calif., 94501

Sound Advice

I enjoyed reading Raymond Leone's article, "Protect Your Hearing," in the December publication. We are now beginning to receive protection against occupational hearing losses through the various Hearing Protection Programs instituted by many companies in response to the U.S. Department of Labor's Occupational Safety and Health Standards (OSHA). It is now up to the individual to guard his or her hearing during leisure hours.

I believe that Mr. Leone was in error when he stated that "every six dB increase on the meter represents a doubling of the sound level." This may be confused with the six dB rule, which states that when you double your distance from a noise source, the sound level is reduced by six dB. This, however, represents a quartering of the sound energy. A three dB increase, therefore, represents a doubling of the sound energy.

Subjectively, most psychologists suggest that a ten dB increase "sounds" as though a noise is twice as loud.

Nicholas G. Read, P. Eng.
Winnipeg, Manitoba

Message From A Moldy Fig

As an oddball, or what most of your RC, jet and rocketeers would call a moldy fig in your camp, I would like to cry a bit from the wilderness just because I'm an optimist, I guess.

I started buying your mag off the stands during the 60s. At first it was only when it had something I wanted. Gradually it got better for me and M.A.N. got worse. I finally dropped M.A.N. after years of subscribing and began subscribing to you. By 1972,

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CARL GOLDBERG

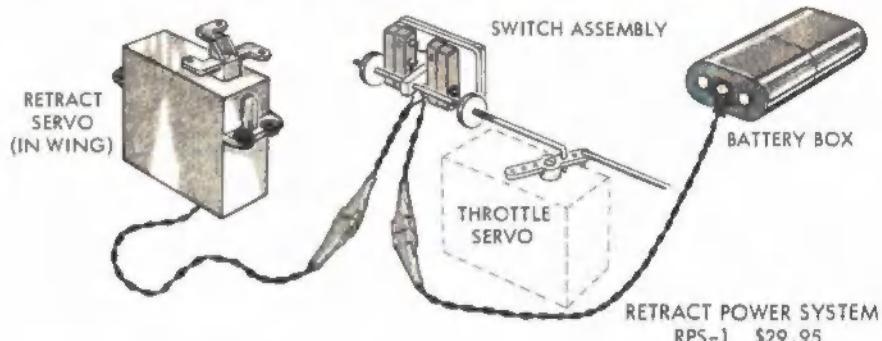
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★ **PRICE:** About HALF of what
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(72 mHz, 2 servos)



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How clever can you get! The problem solved by PARA-POD was how to loft an RC thermal glider without troublesome hi-starts or winches, or worse yet, without ruining the aerodynamics (and the appearance) of a glider by permanently fastening an engine to it.

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PARA-POD includes a 22" fully rigged nylon 'chute, kit for pod and release gimmick, and good instructions. The IDEA alone's worth \$6.95!

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3.7 oz.	.049 to .10		\$61.95	\$55.97
4.1 oz.	Tee Dee .049-.23		\$64.95	\$58.97

All four above systems are identical except for the actuator used, and the capacity of the airborne batteries - the two lightest systems - 225 mah. cells, and the two heaviest systems - 500 mah. cells (for longer flying time). You can inexpensively convert your system to one of the others by simply changing the inexpensive actuators and/or batteries (all components PLUG IN). Our recommendation for the most useful all-purpose systems - the "STANDARD" and "BABY".

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- PRICE: About HALF of what you'd expect to pay for a top quality 1 channel system.

It has become a pretty well-accepted fact among knowledgeable RC'ers that there have been "vintage" years for various radio systems. As digital proportionals have evolved to their present state, a great deal of trial and error was involved. But certain systems from specific years' production of various manufacturers have been ahead of their time in terms of reliability and accurate performance.

During the summer of 1973 we began to realize that we had a "vintage" model in our SERIES III Hobby Lobby. The reliability was tops - the best we'd ever seen in any brand of radio - and the performance began to be discovered by the more sophisticated RC flyers to whom the SERIES III's tight control stick-to-servo resolution, and its ability to preserve their complex contest planes through a long flying season are the criteria for judging a radio system.

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ON THE SCENE

DO GO NEAR THE WATER!

The Rockwell Flightmasters fly Scale off water. Lots of fun and lots of sun contribute to the growing number of waterlogged fliers who populate the shores of Lake Elsinore. / by Jerry Litwak

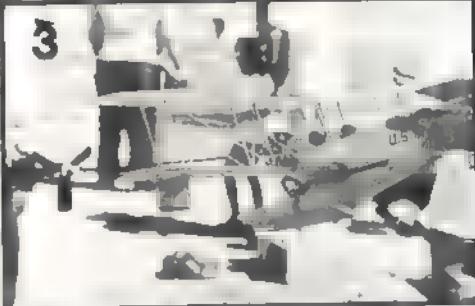
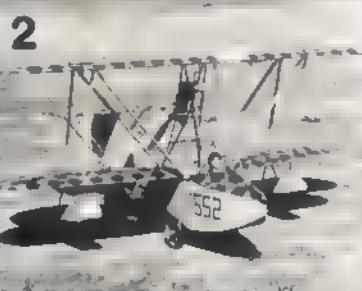
Lake Elsinore, located in Riverside County, California, was the scene of a mad, wet scramble. Otherwise known ■ an ROW Scale Fun Meet and hosted by the North American Rockwell Flightmasters of Southern California, this contest set the scene for some 200 clapping and cheering spectators who traveled many miles to watch 20 contestants get their soggy birds off the water. Entries came from as far away as Las Vegas, Nevada.

Like previous ROW contests in which the fliers flew FF (Gas and Rubber), CL, and RC, the keynote of this meet was best expressed by G-GULP, registration on the deHavilland Tiger Moth entry of Fernando Ramos. Usually ■ good CO-2 flyer, G-GULP stuck to the water as though glued there. Most entries took more than one dunking.

Tom Lowry thrilled the crowd finding the Marianas Trench in its new location at Lake Elsinore, when he abruptly disappeared beneath the water—all but his arm, that is, which held his beautiful gas-powered Osprey.

ROW flying has its own peculiar problem, inherent in the power required to break water, which is generally more than the model can handle once airborne. As the crowd watched Bob Haight's Hanriot biplane make a high speed taxi-run, it became apparent that it

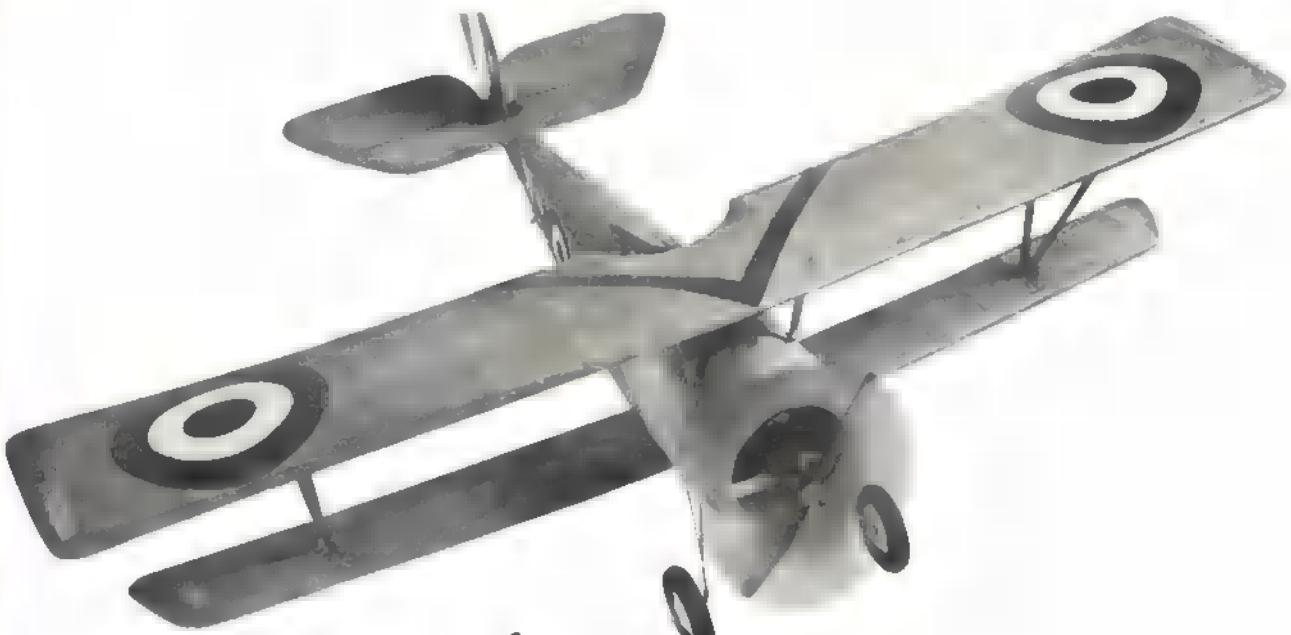
(Continued on page 89)



(1) Joe Tschirgi's Brandenburg W-20 in action. Model placed second because of excellent flight points. (2) Lozenge-camouflage adds to the eye appeal of Tschirgi's Brandenburg. Note scale fuel tank. Plenty of prop blast on the tail feathers gives good control response. (3) Loening OL-9 by Fulton Hungerford has enough workmanship for ten models. Doesn't that three-bladed prop and scale engine assembly make you tingle all over? (4) The CO-2 man, Bill Hannan, with his floating Train. Floats look as if they might have been the design concept of a box car manufacturer. (5) Bill Stroman and son Ray moor their fleet along the shores of Lake Elsinore. From left, the models are a Fly Baby, Stinson SM-2 and Aeronca K. (6) Duperdussin 1913 Schneider Cup Racer. Granger Williams drew the only known set of plans for this rare bird—and, of course, he built the model from those plans.



Photos by Jerry Litwak



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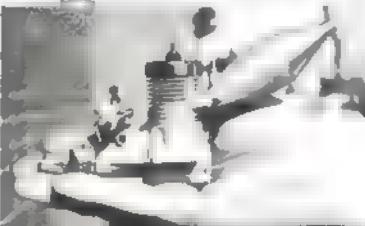
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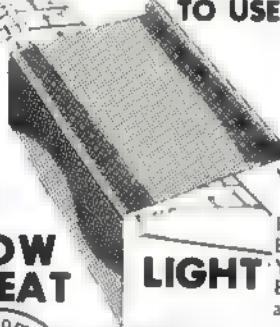
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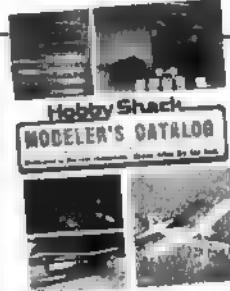
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SPORT III

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SPORT III

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SHOPPING FOR PUBLICITY / by Dick Groat



Thousands of people witnessed the Skyhawks' static display on the shopping center mall.



Announcer Doug Byal calls the shots as Jim Clark, Activities Chairman, looks on.



On Demonstration Day, Marie Porter readies his scale Taylorcraft for flight.



Illustrating the fun of RC modeling, Dr. Plenny Bates, Senior Advisor, displays the "Caution: Adults At Play" sign.



Neme explains club training to an interested spectator. The trainer has a buddy box which is used to teach members how to fly.

In terms of achieving good community relations, the biggest problem facing most flying clubs is publicity. With local media jammed with club announcements of all kinds, how can you be assured that your modeling club's efforts will be rewarded with a good community response?

There are ways to make your club's publicized activities stand out from the crowd. Just ask the Cedar Rapids Skyhawks of Cedar Rapids, Iowa. Not only did the club get its planned Demonstration Day mentioned on local media, but the event received feature coverage on two local television news shows, including films of the planes and interviews with club members. In addition, the Demonstration Day itself was widely attended and the Skyhawks weekend flying field has become a popular stopping place for families out on weekend jaunts.

Here's how it happened. In the spring of 1973, while the Skyhawks were planning their annual August Demonstration Day, they took a long, hard look at the publicity problem. RC models, they reasoned, are a bit like elephants—until the average person actually sees one, he's not terribly impressed. Once he's seen one, however, he generally becomes excited and enthusiastic. So, how do you arrange to expose your club's models to large numbers of people?

The solution was both simple and ingenious. Flying clubs aren't the only people with publicity problems. For example, businessmen are always on the lookout for new advertising techniques. The Skyhawks, therefore, approached the Lindale Plaza Association, a group of merchants who comprise the largest shopping center in Cedar Rapids. These merchants took one look at what the Skyhawks had to offer and realized what a great exhibit these intricate, colorful RC planes would make. The shopping center exhibit was set for the

(Continued on page 88)



RC hobbyists of tomorrow took over the Skyhawks' display.

BILL BOSS ON CL

Scale Judging: During the past three or four months, many club newsletters have carried articles on Scale judging at the '73 Oshkosh NATS. All the articles pointed out one problem that is not only a NATS competition problem, but also troublesome at the local contest level. The problem is inconsistency in judging models from contest to contest, and year to year. I haven't room enough here to analyze and summarize all the factors mentioned in the various newsletters. However, Clark Macomber (a past NATS Scale Event Director) got to the heart of the matter in his editorial on the subject in the October '73 issue of *The Chicago Scalemasters Newsletter*:

"Of the discussions over Static judging at the Oshkosh NATS, one of the top AMA officials has said, 'Comparing judging from one year to another is not what is important.' The AMA official went on to say that 'STANDARDS CHANGE, and a drop of over 35% in a top model's score from its previous average is not to be viewed as exceptional.'

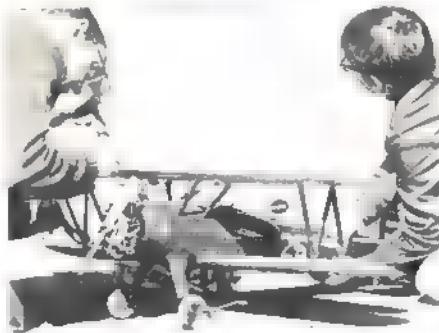
"These comments indicate a lack of understanding which is, unfortunately, rather common. Let's see how Scale judging **MUST** function to prevent Scale competition from becoming a form of Russian Roulette.

"Good Scale judging can be, is, and will be comparable from year to year. One of the characteristics of inadequate Static judging is that it merely gets the models ranked in the correct order. With good Static judging, a single model's score should remain approximately the same (say $\pm 10\%$) year after year, regardless of whether the majority of other models are better or worse. This is because good judges determine each model's score by comparing it with a theoretical 'perfect model' rather than with the other models entered in the same contest. (The 'perfect model' is the actual prototype aircraft merely reduced in size.)

"Let me explain why this is so. First, judging to a relative standard is filled with traps and pitfalls. Although it is useful (and necessary) to rank models approximately by quality before beginning to judge, there will always be occasional models that, on closer examination, are found to be startlingly different in quality than was first surmised. For a group of judges using an Absolute standard, this will not present a problem. The model is scored normally and it automatically falls into a correct relationship to other models in the competition. For judges using a relative standard, it's likely to be a nasty surprise. They may be faced with rejudging many of the other models, or pointing the 'sleeper' too close to, or too far from, other models because they haven't left enough space in one segment of the scoring spectrum, or have clustered the other models too much in ranking them."

Macomber also compared the results of the past few years with the 1973 results to further illustrate the need for consistency in judging. He did not, however, tell me how to achieve that goal. Here, I would like to express my own impressions of what is required, and if you don't agree with my comments, I'd be glad to hear from you.

Boeing Kaydett by Ernie Violett. Open Class Winner in CL Scale in '72 NATS with 460 points; placed eighth at Oshkosh '73 NATS with only 333 points. Static judging made the difference.



Jeff Worsham assists "Kirk" Kirkham in preparing his PT-17. Gusty winds and low power transformed the model back into kit form.

Robert Parker (Idaho Falls, Idaho) gets close to the work on his P-47. Ty Marcucci gives moral support.



A Judge should be fairly knowledgeable about many types of planes, but need not know them inside and out. He must be able to interpret drawings and documentation as it applies to the model under consideration. He must know the rules for the event which he is judging (CL, FF, RC). He must make use of all judging tools at his disposal, i.e., Standard Judging Forms, Judges Guide, etc. He must overlook personalities and put aside prejudices for certain types of planes. He must apply the rules equally to all entrants. Finally, he must judge each plane on its own merits. I can't help but feel if these basic fundamentals were followed in contests, inconsistency in judging would disappear from Scale events.

If we are to keep Scale a lively event, we must have good, consistent judging, whether it is at the national level or in our local contests. There's nothing more discouraging to a Scale modeler than to come away from a contest feeling that he lost because of poor judging.

New Aviation Newspaper: During a visit to England, Chicago Scalemaster Jim Newman came across a British publication with a great start on model making. *Aviation News*, a 16-page, 11 1/2 x 17" newspaper, appears bi-weekly and is full of new material on old and new subjects. The print and photos are of exceptional clarity. The main feature is a double page spread of three-view drawings with cross

(Continued on page 101)



WALT MOONEY ON FF

Peanut Scale's Eastern Origins: Generally, my columns have covered mostly Western events with occasional small inputs from other parts of the country. Peanut Scale has been continuously increasing in importance, also in these reports. Let the readers think that Peanut Scale was a Western innovation. It should be pointed out that Peanut Scale was the brainchild of Dave Stott and Bob Thompson, members of the Flying Aces Club of Connecticut.

These two wiley cousins of Phineas Pinkham originated the competitions for these small rubber-powered scale ships in an effort to put more fun at less cost into the hobby. I think they deserve a lot of credit for the endeavor. Before WWII, the Megow and Comet model airplane companies would have loved Dave and Bob because a lot of the old tenant kits would have been just great for Peanut Scale. Ahhh, nostalgia! Phineas Pinkham and ten-cent kits.

The Flying Aces Club's Fall Meet—October 7, 1973: At the Durham, Connecticut, flying site, the weather was calm and sunny. Thirty contestants turned out with 67 entries.

Seven events were flown: Rubber Scale, Peanut Scale, No-Cal Scale (Profile models), Embryo Endurance, and three events for models of racing planes of the 30s. These were the Shell Speed Dash, the Greve and the Thompson Trophy races. While most of the modelers have seen the ordinary events, these racing events put on by the FAC are new and different and would seem to offer a new dimension and challenge for scale modelers. Again, Dave and Bob have come up with a fascinating innovation.

A model must get a flight in the Shell Speed Dash in order to get a place on the starting line of the other races. The contestants are placed on the starting line five or six ft. apart. The starter gives them two min. to wind their motors. At the signal to launch, all contestants let their models start simultaneously.

(Continued on page 101)



Tom Naten, Jr. and his R-3 took second in the Thompson Trophy.

What everyone waits to see. Five racers head for the No. 1 pylon in the Shell Speed Dash.

SUNDAY FIGHTERS



KEN WILLARD

During the summer of 1973 I was trying to think of something different and exciting for the second annual WWI Western Front Jamboree, sponsored jointly by American Aircraft Modeler and the Pioneers RC Club of Sunnyvale. The year before, I'd made a hit with a little 24-in. S.E. 5 powered with an O20. Tough act to follow.

Curiously enough, I had been experimenting with Ace foam wings while trying to develop a Sunday Glider. It turned out successfully and Ed Sweeney bought it for publication in AAM. So I built another one, taking a little more care than I do when I'm testing initially. In the process, I used four untapered Ace wings—two for the left wing and two for the right wing—and had polyhedral with $3\frac{1}{2}^{\circ}$ both at the center and tip panels.

Well, I had the left wing put together, then the right wing and was about to join them at the center section. As I did, for one brief moment I put one above the other. Instant biplane! Looked like a set of S.E. 5 wings all ready for rudder, elevator and motor control. Just the right amount of dihedral to give good rudder turns.

That was it. Why not make a Max 10 powered Semi-scale S.E. 5 for the Jamboree? No, that wouldn't quite do the trick. Gotta do better. Got it! Make two Semi-scale models using the same wings, but gussy one up with balanced ailerons (fake), elevator and rudder, with a scalloped trailing edge on the wings. Paint it red and make some German crosses out of MonoKote. Then, on the other, paint and decorate it a la RAF, and make the wing tips and tail surface look a bit like the Bristol.

As a final touch, change the landing gear slightly, with both struts forward of the wing for the German versions, and one strut extending back to the trailing edge of the lower wing for the English type. Also, make some fake engine heads and exhaust collectors or louvres, just to change the front end appearance. The rest of the design is common to both, except for cutting off a couple of inches from the lower wing tips of the German version to give it the Fokker D. VII touch.

And thus the "Sunday Fighters" came to be. Now, what should I call

Achtung! Come fight mit mir!
In my Fokker Heinschmitt!



them—individually? Well, the German version looked a bit like a Fokker, or a Heinkel, or maybe an early Messerschmitt. So, let's call it the Fokker Heinschmitt scale model. Absolute scale—one to one on the original. And the English job? Well, there's a bit of Bristol, and maybe some Spad, and for good measure you might detect some Nieuport. So, let's name this one the Bristol Spadport. Keep everybody happy.

And what fighters they turned out to be! Fast, but not too fast. Maneuverable, but not tricky. Surprisingly rugged, and a snap to repair compared to most. I know—in the Balloon Busting event, I missed the balloon but hit the supporting string; it wound around the prop shaft and pulled the model over on its back and into a dive into the ground. Snapped the cabane structure loose and broke a wing. With some five-minute epoxy and 15 min. of work, it was back in the air for the next event.

You should see them take evasive maneuvers in Dog Fighting. Snap rolls into spins, even inverted spins. And if you roll inverted and keep the speed up, you can even maintain inverted flight. Sure, it will roll out if you let the speed drop too much. But I have to tell you! These Sunday Fighters are the most fun I've had with power planes in a long time.

A word of caution. For best performance, keep the construction light. Use medium grade balsa throughout; these are not big planes, and don't need the rock hard stuff. And don't go for the super finish—adds too much weight. To paint the wings, I recommend that after you've sanded off the molding

The Fokker Heinschmitt built to Sunday Scale. Louvres, dummy cylinder banks, pilot (with scarf, hatch) create the illusion of the great air war.

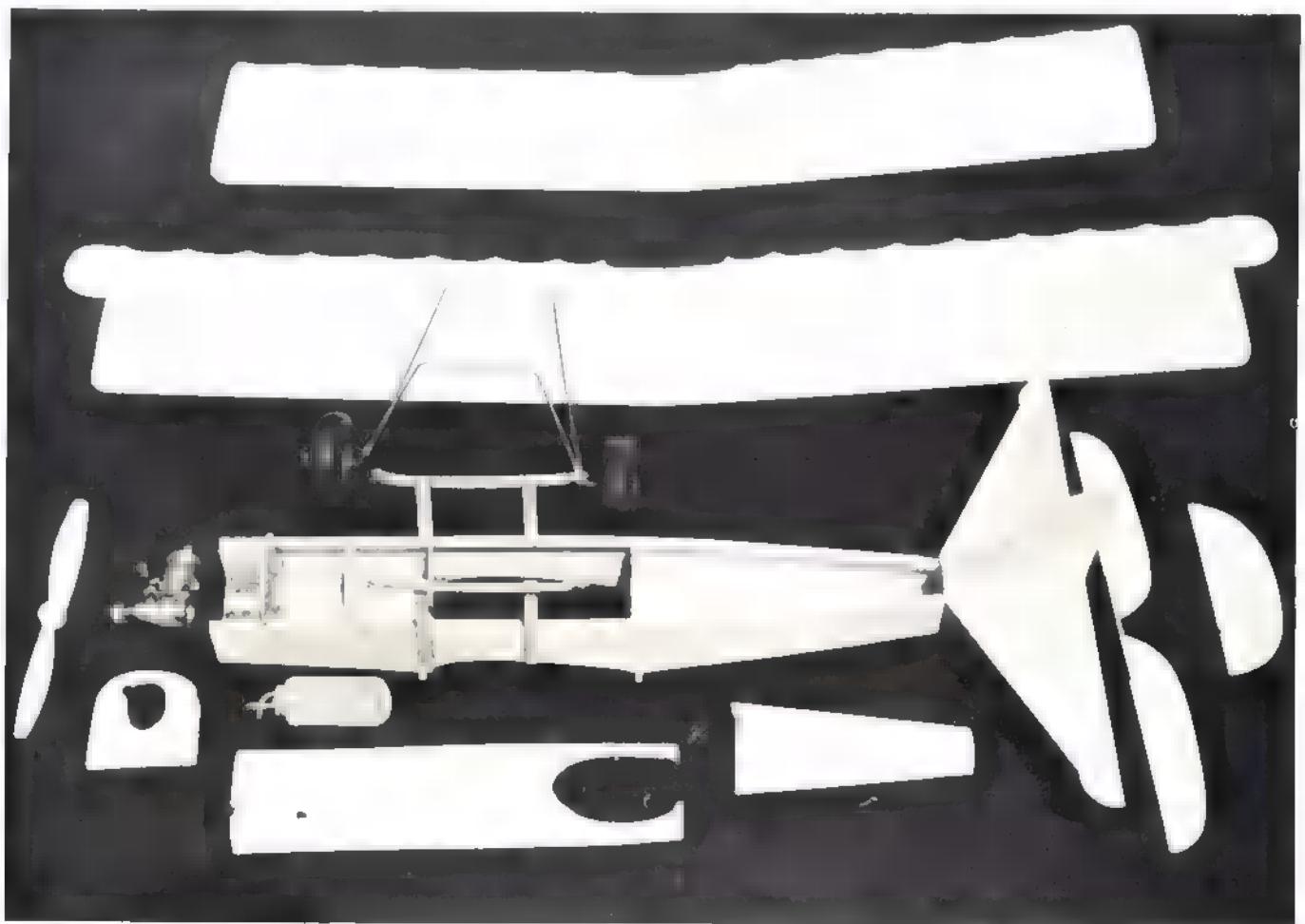


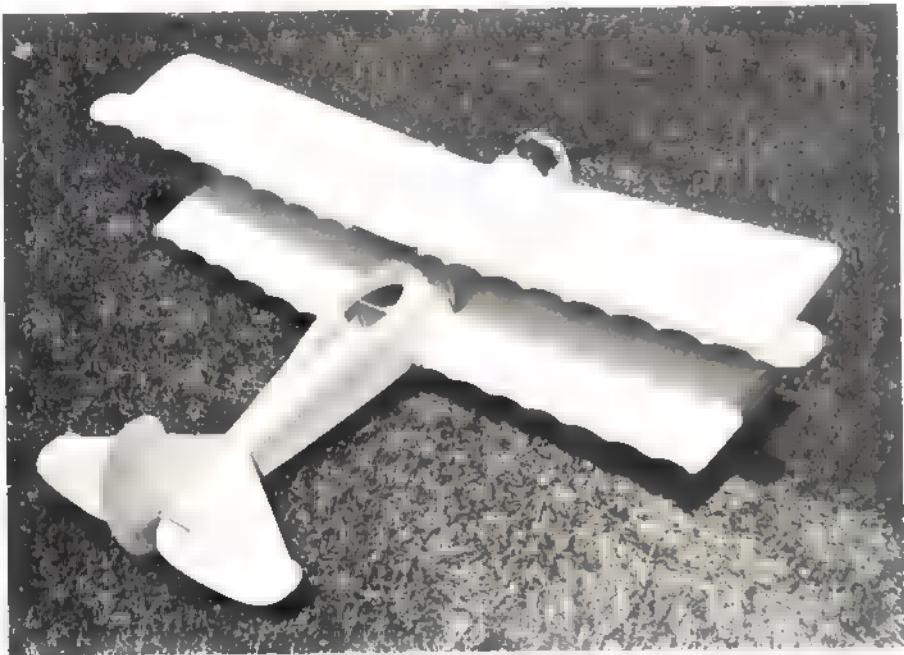
ABOVE: The Heinschmitt attacks! Below: Burst is the mission. Bomb drop (via cup strapped to wing) has already been completed. Model offers maneuverability needed for these fun events. RIGHT: weekend project to spawn a Sunday Fighter. A box fuse, two foam wings and you're on the way to instant nostalgia.

I say, old chap, let's have a go!
In my Bristol Spadport!

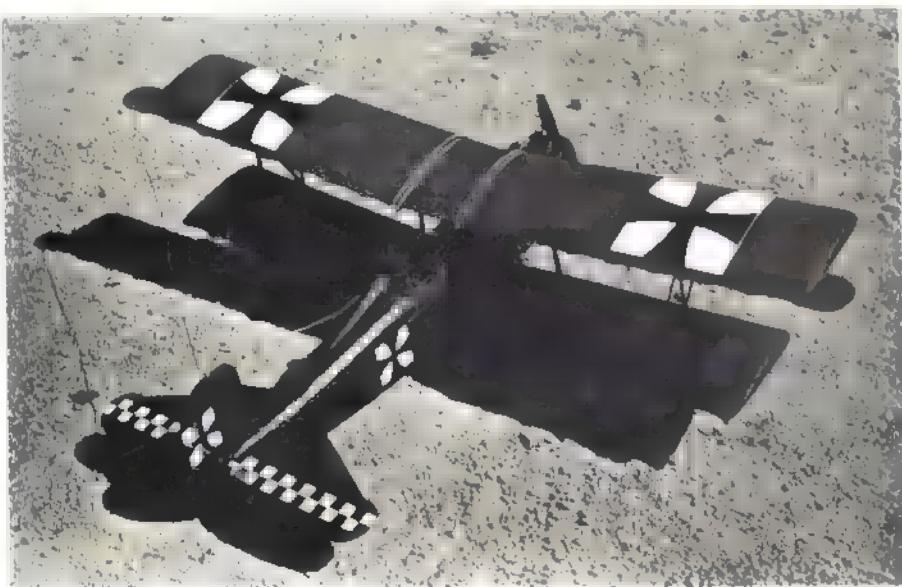


The Bristol Spadport has simple geometry which makes for easy building — finishing. A natural for front line action on a Sunday afternoon.





Wiltard's wonderful bi-winged thing (above) makes the metamorphosis to...the Heinschmitt (below).



The Hun in the ■■■ at the West Coast WWI Jamboree. Heinschmitt gets the upper hand ■■■ Sautiner in the Combat event. (Photo by M. B. Groves)

flashes (and the scalloped balsa trailing edges on the German version), simply spray the surface with Testor's Spray Pla Enamel. Hold the can about a foot away when spraying; if you get too close, it could "eat" the foam slightly. And just apply enough to coat the foam with a uniform color. You can use the same spray for the balsa surfaces, or ■■■ a similar color of Aero-Gloss fuelproof spray if you prefer. Don't undercoat the balsa; it won't matter if the grain shows.

Now that I've given you the preliminary warning about keeping things light, let's talk about some of the details of construction. There's not much to tell that isn't already apparent from looking over the plans carefully. Just ■■■ couple of building hints is all you'll need.

WINGS: For the Bristol Spadport, you hardly have to do anything. Paul Runge has stocked a special set of "Sunday Wings" which have the dihedral pre-cut to give $3\frac{1}{2}^{\circ}$ in each panel. Order ■■■ set (Catalog No. 13L65) and when they arrive, simply butt joint them together at the center and epoxy. If they don't match exactly, due to slight variations in the mold, make sure the bottom surfaces match and let the top be slightly out of alignment. It won't be more than ■■■ $1/16"$ at the most. But it is important that the bottoms match to assure uniform incidence in both wings. Epoxy the $3/16"$ dowel in at the TE.

Cut the wing tips and give them the slanted shape as shown; then round them to a smooth contour. Presto! That's it—except for painting.

The Fokker Heinschmitt wings require more work due to the addition of the scalloped trailing edge and the aileron overhang. But it's easy. Sand the trailing edges flat and vertical, and they'll come out about $3/16"$ high. Shape a strip of $3/16 \times 1/2"$ to the scallop form; attach it to the trailing edge with Titebond and, when dry, sand it to conform to the airfoil. The fake aileron balanced surface is just fitted in place with Titebond after the $1/4"$ strip is added to the wing tip and shaped.

TAIL SURFACES: These are cut from $1/8"$ flatstock to the shape shown depending on which version you are building. Round off the edges and that's all there is to it.

FUSELAGE: This is a standard "box" construction with a hatch and "turtleneck" added on top. The plans ■■■ self-explanatory, but there is a variation you can use if you prefer as I did on the first prototype. The plans show a built-up hatch and turtleneck with formers and stringers. Since I was in a hurry, I went ■■■ simpler although slightly more expensive route. I used ■■■ $1 \times 3"$ block of very light grade balsa and carved it to the shape of the hatch and turtleneck. Then I hollowed it out to accommodate the tank and also to reduce weight. The turtleneck was glued on permanently with the hatch held in place by running a small rubber band over it from one side to the other. Simple and quick.

Up forward in the engine compartment, $3/16"$ doublers are added to the (Text continued on page 76)
(Plans on page 24)

SVENSON'S 1 ST ANNUAL BUILT-UP 'WAYFARER' CONTEST!

GRAND PRIZE!

SPRINGS, CALIFORNIA!! Yes, you will enjoy a week of relaxation — basking in the warm sun, playing TENNIS, GOLF, SWIMMING or just laying around enjoying the scenery. PALM SPRINGS WEATHER IS IDEAL FOR R/C FLYING EVERYDAY! You can take a ride on the World Famous Aerial Tramway ascending to an altitude of 8,260 ft. above the desert floor with over 100 mile visibility. You will be able to dine in the finest gourmet restaurants and ■ the Winter homes of the Stars! During your stay ■ PALM SPRINGS, you and your family will have the use of a NEW — 3 BEDROOM, ■ BATH HOME completely furnished with SWIMMING POOL & HOT JACUZZI THERAPY POOL. We will include AIR FARE for a family of 4 from any city in the U.S. and for your convenience we will FURNISH AN AUTO FOR YOUR ENTIRE STAY!

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MULTIPLEX-ROYAL!! The complete package with 8 CHANNEL TRANSMITTER, 6 servos, micro receiver and Multiplex-combileader. This unit has the new balljoint movable antenna which is removable for easy storage. I/C's are used throughout the encoder. All potentiometers are cermet types, resistors ■ metal film and special mention should be given to the transmitters 1000 mAh nickel cadmium batteries, which enable ■ operation of 8 hours without recharging. The MICRO RECEIVER is extremely small dimensioned (2 ■ 1.45 x 1.1 inches and a weight of 1.6 oz.) This compact design ■ be installed in the smallest model. Your MULTIPLEX ROYAL will give you years of trouble-free R/C enjoyment.

3rd PRIZE

MULTIPLEX 4!! This is the complete package! A 4 channel transmitter with 4 servos has the same capabilities ■ the MULTIPLEX-ROYAL. This system can be expanded to use with cars ■ boats as well as AIRPLANES.

4th PRIZE

The next 10 WINNERS will receive ■ WAYFARER KIT. These kits include all accessories that help make model building FUN!

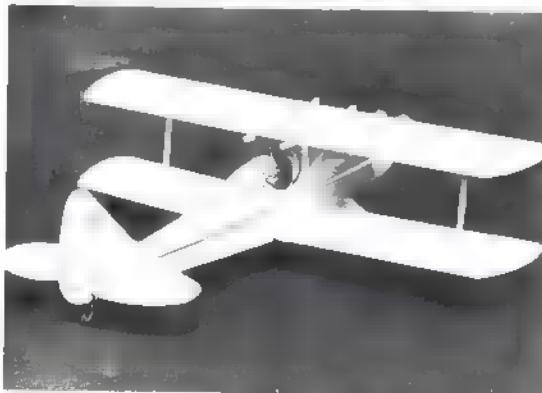
CONTEST RULES:

1. Modeler must have BUILT-UP verified by DEALER from whom purchased
2. Modeler must cut out and include MODE DE CONSTRUCTION box ■ fuselage plans
3. Modeler must include BLACK & WHITE and COLOR photos taken at all angles. Be sure to include as many photos as possible.
4. All entries must be addressed to TENCO INTERNATIONAL, P.O. BOX 1987, PALM SPRINGS, CA 92262, no later than May 31, 1974.

Judges will include staff members of R/C MODELER and ART GRISA (U.S. MANAGER, SVENSON SALES, TENCO INTERNATIONAL).

The winners will be announced at the MODELS & CRAFTS SHOW held in Anaheim, California the end of June 1974.

This contest will be void after 500 entries.



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FOURTH

8

BRISTOL SEAPORT
FOR ACE R/C FOAM "SUNDAY WINGS" KIT. NO. (3165)
DESIGNED BY: *Ken Willard*

"INDAY EIGHTERS"

ЛИКЕИ 2000

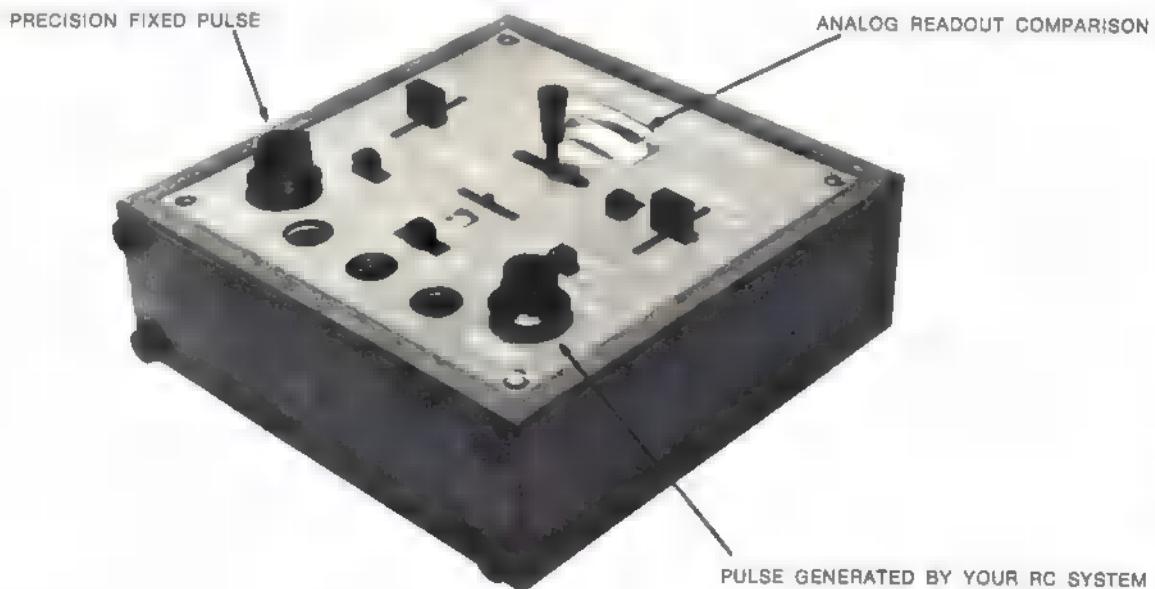
8

LEFT = RIGHT

UP = DOWN

CORRECT? - BE SURE

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FOR PRECISION TESTING OF YOUR COMPLETE RC SYSTEM**



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Western Front WWI Jamboree

HILL COUNTRY, CALIFORNIA '73 / by M.B. Groves



Amid the cumulus billowing high over the valley floor, a Fokker Dr. I and a Sopwith Triplane are locked in mortal combat. Weaving legends of the Western Front, theirs is a sky full of wings. Climbing diving, looping, rolling, twisting-twisting the thin strand.

Below the aerial gladiators, hundreds of spectators thoroughly enjoy the melee. For here, it's not September 1918, but September 1973. And here, everyone is safely lounging on the lush grass of Morgan Hill's Hill Country Air Museum, just an hour's drive south of San Francisco.

Irving Perch, amiable host of Hill Country, again provided fantastic facilities for both spectators and flying competitors attending the 2nd Annual Western Front WWI Jamboree, co-sponsored by American Aircraft Modeler and Pioneer RC Club of Sunnyvale, California.

Initiated in 1972, the Western Front Jamboree was patterned after New York's successful Rhinebeck. In order to increase participation, it was modified this year to include Stand-off Scale. Even though anticipated attendance was impaired by the gasoline shortage, participation was good and included 20 aircraft of all varieties. Both the quality of the flying and the models were outstanding.

Events held included AMA and Stand-off Scale, WWI Maneuvers, Mission (bombing, balloon burst and spot landing) and Team Combat. This spectrum of events is a challenging bill of fare wherein an overall Grand Champion is determined from adjusted scores of all events.

Starting off the two-day AMA-sanctioned contest was the AMA and Stand-off Scale judging. Providing a welcomed addition to this year's contest was the participation of the Cross & Cockade, a Society of WWI Historians. Jerry Edwards, Warren Oberhaus and Frank McIntosh, leading members of Northern California's Bay Area Chapter of the C&C, enjoyed the opportunity to apply years of historical research and

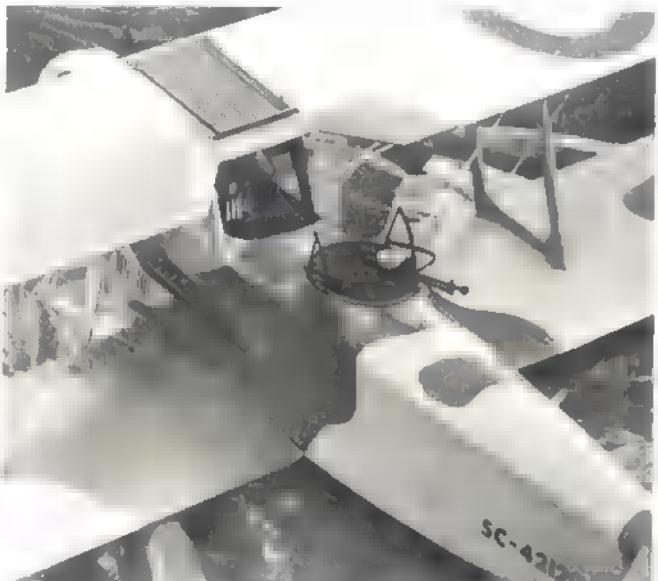
Gene Pond's Eindecker has just released a (flour bag) bomb at the cardboard aerodrome below and to the right.



Call back yesterday. Bid time return—Shakespeare. George Papendrea's Nieuport 17 awaits a Nungesser, Guynemer, Ball or Bishop. It's a V.K. kit.



Grand Champion Sopwith Camel with engine turning and streamers waving, Col. Thacker's relic was one of the few with a well-detailed pilot.

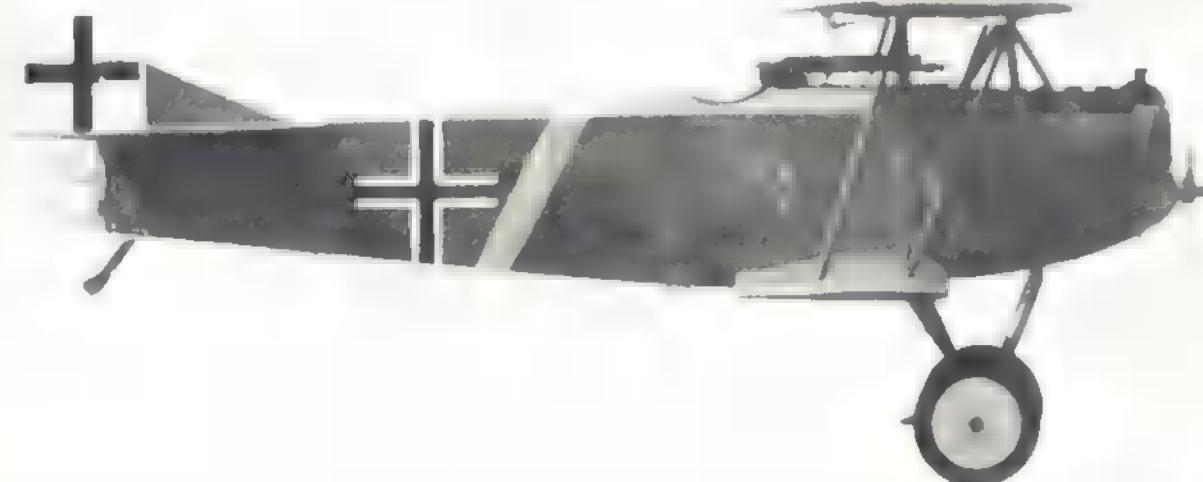


Photos by M.B. Groves

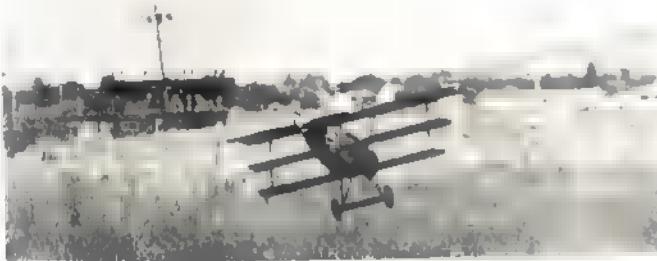


Wally Hurley's well-engineered Sopwith Triplane made a great showing in the Combat event. With six ailerons, it rolls with authority.

Attention to internal and external details made Floyd Carter's American Packard-LePere LUSAC-11 a winner (AMA Scale event).



Sans pilot, Gerry Wolfram's D. VII makes a low bombing run using wing mounted cup method. It's a Sterling giant kit.



Score another victory for the balloon. Nick Maire's Dr. I pranged the grass an instant after this photo was snapped.



After two days — the Western Front, here are the survivors. By the size of that monster in the background, you'd wonder if the Sikorsky "Grand" or a Gotha Type 4 had arrived.



"Gentlemen, your target for today is..." (Scoring — accomplished by measuring hits nearest to the center.)



Carter's LePere lifts off on a winning flight. You'll — it in a coming issue of AAM.

study to the scale and flight judging. Considerable exchange took place between judges and contestants concerning finish, colors, proof of scale and markings.

The AMA Scale winner was Floyd Carter's magnificent two in. to the ft. American Packard LePere (soon to be featured in AAM). The ST 71 powered, 10½ lb., 78-in. equal span model was the most realistic flying model at the contest. Its size, coupled with its very scale flying characteristics, was enough to edge out Col. Robert Thacker's Sopwith Camel.

With Mrs. Thacker calling for him, the Colonel did an outstanding job of flying the well done Camel. Scratch-built from Swiss plans, this two in. to the ft. Camel is powered by an OS 60. The builder obviously solved the incredibly short nose moment of the 7½ lb. Camel by adding 1½ lb. of lead ballast up front.

The "Allies" made a clean sweep of the AMA Scale when Wally Hurley placed third with his well-executed Sopwith Triplane. The equal span triplane is quite a sight to behold, and once aloft, flies rock steady in the air.

Pioneer Stand-off Scale, which does not invoke the Builder of Model rule, was a new event this year. A German Fokker, one squirrelly Dr. I, flown by Pan Am Captain Nick Maire won first place. Gerry Wolfram and his D. VII did an excellent job, and came in second. Bernie Yurash and his Morane-Saulnier in Imperial Russian Air Service markings took third.

The meet's only serious crash occurred during the Scale flying when the wings of Jim Gillott's S.E. 5 collapsed—realistically—while recovering from a loop. The Cross — Cockade Judges would have scored him high points for the maneuver—if he'd only called it!

The atmosphere of this meet was perfect. There were clean and unobstructed surroundings, warm and pleasant September days, great sportsmanship by the contestants and the coopera-

(Continued on page 90)



New 3-channel LRB. New 4-channel LRB. New 5-channel Champion. New 7-channel Super-Pro. This is EK's year.

In 1974, EK-Logictrol is introducing a host of significant innovations to R/C flying.

There's the new LRB-3, with I/C servo amplifiers giving greater controls, economy and faster servo response.

There's the new LRB-4, the first 4-channel brick receiver/servo package available with I/C servo amplifiers, Ni-Cad receiver pack, transmitter voltmeter and single- or dual-stick control, priced from \$199.95.

There's the new 5-channel Champion, providing the sport flyer with a dependable, high-performance unit at its most affordable price ever — \$299.95 — with dual-stick throttle right or left, and your choice of servos.

There's the new top-of-the-line 7-channel Super-Pro, specially designed for the experienced or competitive flyer, featuring single- or dual-conversion receivers.

There's the new expanded-scale voltmeter, and the light-emitting diode on battery circuits, standard on all 1974 Champion and Super-Pro units.

There's EK's exclusive, renewable one-year warranty, introduced last year and still available on all Champion and Super-Pro units.

There are EK's precision control sticks with adjustable tension, standard on all units, and EK's popular Mini-Mite (linear or rotary) and Super-Mini (rotary) servos.

There's EK's unsurpassed reputation for quality, service and reliability.

In 1974, EK-Logictrol is putting control, power and economy into the hands of the R/C flyer.

It's EK's year. And it could be yours, too. Take the controlled approach to R/C flying.

LRB-3 \$129.95

3 channels/two servos/one or two sticks

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4 channels/two servos/one or two sticks

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7 channels/six servos/two sticks/single conversion

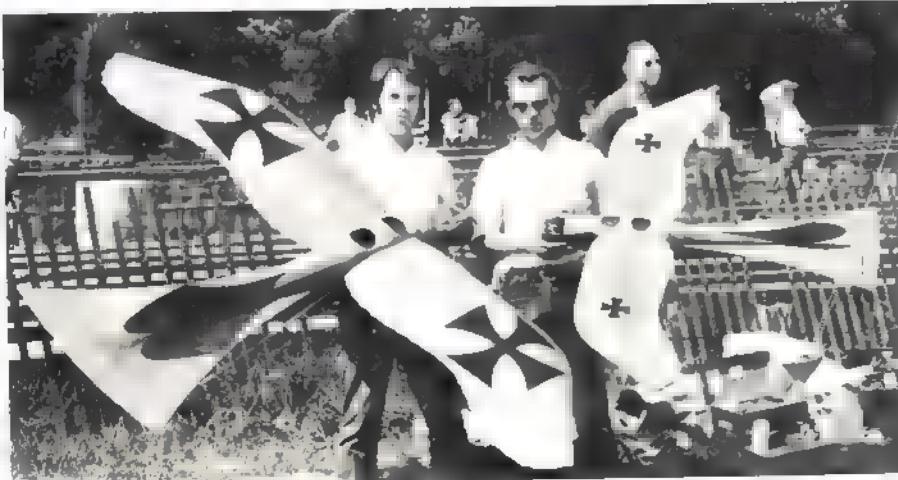
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our full-line brochure, write EK-Logictrol, 3233 W. University, Hurst, Texas 76053.

RHINEBECK



ABOVE: The engine of a beautifully restored Sopwith Pup is carefully warmed up before flight. RIGHT: Prussian "General" Dave Fox of the Palan Pilots talks it over with George Buso. BELOW: Nick Zirroll and Dave Jaggie with two of Nick's Taubes. A little difference in size.



The biggest yet! Every year the enthusiasm over WWI aircraft seems to grow and grow. This year at the Cole Palen Rhinebeck Aerodrome located in scenic Rhinebeck, New York, along the Hudson River just two hours driving from New York City, and a short distance from beautiful Hyde Park, home of Franklin D. Roosevelt.

WWI modelers took to the air on Saturday and Sunday, September 8 and 9. The Aerodrome, literally buzzing with activity, was an ideal location for the contest, with its authentic setting, lovely countryside and airport full of WWI planes, cars and hangars. Contestants came from all over to compete in the largest WWI contest of its type. There were fliers from as far south as Florida and as far west as Wisconsin. The campsite was full of motor homes, campers and tents.

The contest was attended by more than 2000 spectators on Saturday and a record crowd of over 8000 on Sunday (one of the largest crowds ever at the Aerodrome).

Contest Director for the event this year was George Bickel of Hopewell Junction, New York, past president of the Mid Hudson RC Club, the sponsoring group.

Each contestant flew three rounds of his own individual event, either Scale, Mission, Combat or Maneuvers. This year 123 entered the airshow and all the WWI planes you've heard about were

A PLEASANT JOURNEY INTO THE PAST.

by Al Novotnik

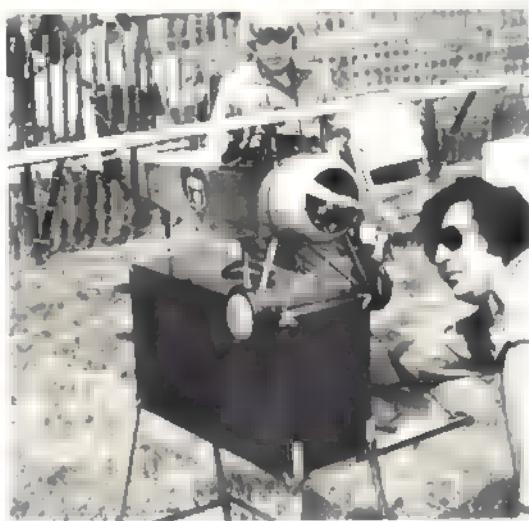


ABOVE: This Stand-off Scale? Walt Moucha's scratch-built Sopwith Pup plifies the quality of Rhinebeck entries. LEFT: WWI revisited—a scale modeler's dream. BELOW: One of the almost 50 contestants about to enter the "crash event."





ABOVE: Aerial shot of the aerodrome shows just a small portion of the more than 8000 people who came to relive the halcyon days of flying. RIGHT: G. Rose in his Nieuport took third in the Maneuver event. BELOW: Cole Palen, the villainous Black Baron, made a fast fly-by in front of the crowds during the Sunday airshow.



there—Nieuports, Fokkers, Saulniers, Eindeckers, Sopwiths, etc.

Quite a few modelers chose the Nick Ziroli Taube design to fly in various events. The Taube is quite a unique looking plane with its rounded wings and long tapered tail; in fact, it looks like a bird. Nick himself came to Rhinebeck with a large version spanning about seven ft. Powered with an OS 60 engine and taking its commands from a Heathkit Radio, it flew very well.

The high trees along the runway took their toll of the little flying machines, 27 of them to be exact, the first day. The Aerodrome is a long narrow field with the grandstand to the pilots' back, and the runway in front of them with trees along the entire length. But even though the trees swallowed up many airplanes, flying was superb.

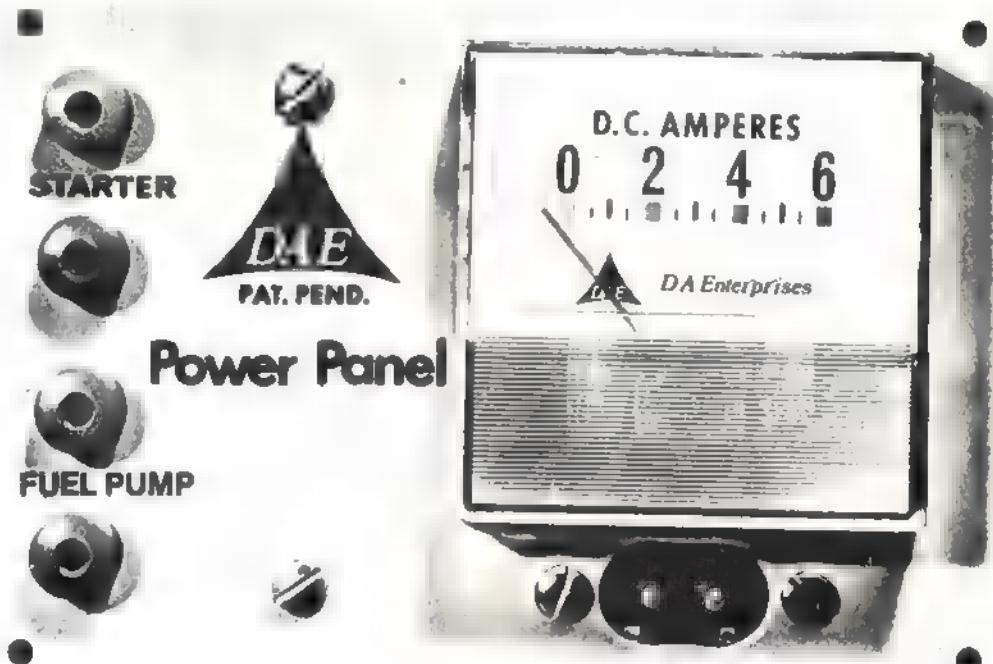
Mission and Balloon Bust events are always fun events to watch. The object of the Mission event, of course, is to drop a bomb in the prescribed circle on the runway. The object of the Balloon Bust event is to break the balloon on the first pass over the balloons. Determination really takes over here and you everything from balloons being broken to the supporting poles for the balloons being knocked down. Eventual winner of the event was Bill Wardlow of New Jersey flying a Major Saulnier, Pro-Line Radio.

The Combat event is something else again. The spectators really enjoy this one! It takes a good pilot to fly in Combat. Some drop parachutes, others have streamers trailing from both wing and tail, giving the opponent something for which to aim. And there are a few who bring along a tape to play over the

(Continued on page 83)



Buy The Best!



Shown Actual Size

If you're going to be at Toledo this year, be sure to stop by the I.S.C. Hobby Supplies booth and check out the DAE Power Panel. In the meantime, for more details on the operation of this little gem, see our other ad elsewhere in this issue.

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MANUFACTURERS FOR THE AERO MODELER

BIPES 'N TRIPES



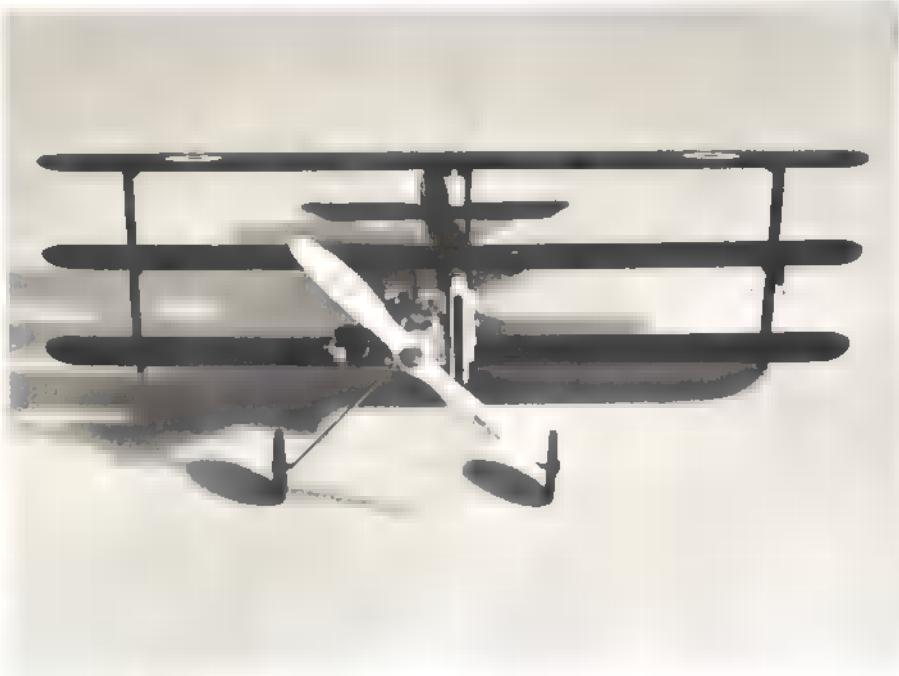
Nostalgia flies again! By yourself, friend against friend, club against club, or Snoopy versus the Red Baron—it all adds up to one thing: SUPER FUN COMBAT. All of the airplanes stunt. The bipes are a bit faster than the triples, but the triples are a bit snappier than the bipes. Even match? You bet your doghouse!

Have you ever been chased by a Fokker, tried a snap loop to get on his tail and cut your own streamer in the process? Has Sopwith ever bounced his wheels off your top wing, received four prop slashes in his fuselage, only to fly off into the sunset flaunting his uncut streamer? No? Well, clear the workbench, because BIPES and TRIPES are here!

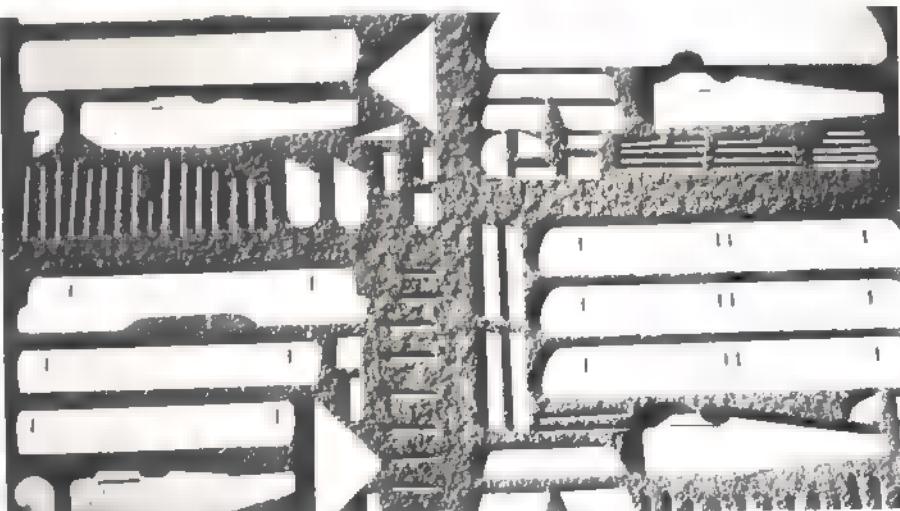
These planes are designed to be air-worthy, crash resistant, colorful $\frac{1}{2}$ A flyers which will provide hours of fun. The Cox Golden Bee with its stunt tank has proven to be the best all around engine. The Babe Bee works quite well, too, so mounting instructions for that engine are shown. Be sure to rotate the tank 90° so the engine cylinders will point to the outside of the circle when mounted. (See plans.)

Begin construction by drawing full-size plans. Tick marks have been provided around the edge of the plans to aid you in blowing them up. Connect these ticks, making a square grid pattern over the magazine plans. Then draw one-in. ticks around the edge of a 31×22 " sheet of thin poster board or wrapping paper. Connect these in the same manner. Now the plans can be enlarged by drawing on the poster board what you see in each small grid in the magazine. The poster board is useful because it can be cut into stiff patterns for easy construction and for future BIPES and TRIPES. (Instead, you may wish to buy the full-size plan from AAM's plan service for \$1. Tenderfoot decals for your plane are included.)

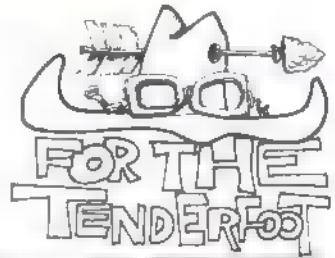
Materials needed are $1/8$ " thick, four-in. wide balsa sheet for the wings and tails; $3/8$ " thick, four-in. wide balsa



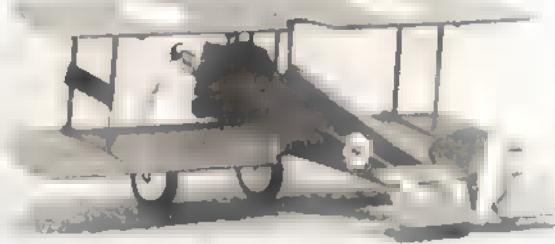
Tripe shows how the engine is attached with the aluminum mount. Mount and engine alterations are explained in the text. You can make a wooden mount if aluminum is not available.



ABOVE ■ RIGHT: All these parts and pieces make all these nice bipes and triples.

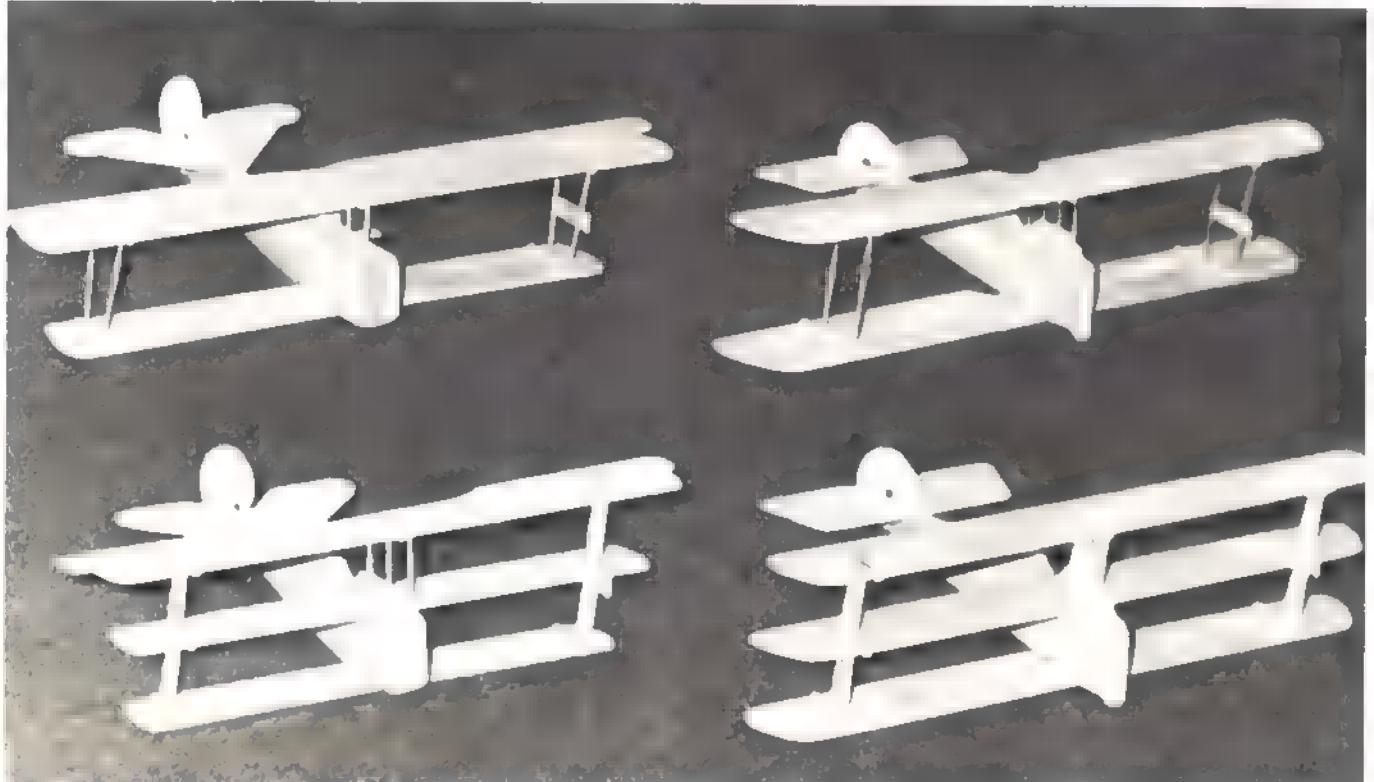


Build four all-balsa 049 control liners from the plans and have some combat. They are lively fliers of WWI vintage. / by John Hunton



Sopwith biplane (Camel). Color it olive drab, put **■■■■■** decals on it and the allies have a machine to do battle.

Fokker triplane, the challenger, is a tight looper, but not quite as fast as the allies' planes (in model form). Paint it all red, then add the **■■■■■** on white crosses.

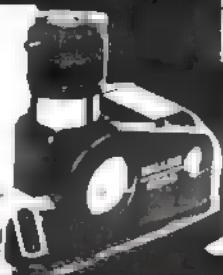


(Photos by John Dent)



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DIGITAL COMMANDER 1-8



- Compatible with any modern digital transmitter: 4, 5, 6, 7 or 8 channels. ■ on same RF frequency. Use it ■ extra flite pak.
- Available ■ 26.995, 27.045, 27.095, 27.145, 27.195, 53.100, 53.200, 53.300, 53.400, 53.500.
- Receiver-Decoder in its case ■ 1.45 x 1.72 x 1" deep. Weight is 1.4 ounces.
- May be used with positive pulse servos.
- You can begin with 1 or ■ channels if you want to start simple. Adding channels is easy; ■ conversion required—all you need are a servo and connector for each channel.
- Performance counts! Hundreds of letters from satisfied flyers attest to the fact that the Digital Commander ■ there with ■ best! Kits CAN be assembled with little ■ experience—following directions ■ MUST, however!

SERVO KIT

Housed in the D & R Bantam DS3P mechanics, uses WE 3141 IC for ■ in assembly. Kit contains motor, pot, wiper and all components required, with step-by-step manual.

Weight for the DS3P servo ■ 37 grams: 1.3 ounces. With the DS2P servo, 44 grams: 1.56 ■.

No. 14G20—Digital Commander Servo Kit \$21.95
No. 14G20L—As above, except with D & R DS2P Linear Mechanics (Less connectors) 22.95

RECEIVER-DECODER KIT

Up to 8 Channel Capability!

Here is ■ Ace Digital Commander (1-8) Channel Receiver-Decoder Combo. This is the ultimate of the 2 channel system developed by Fred Marks, which received a great reception and ■ with fantastic success in the field.

Voltage regulator has ■ added to replace original filtering of power supply—this results in outstanding improvement of performance.

With the new decoder you have your option of going with 2, 3, 4, 5, 6, 7 or ■ servos—whatever your transmitter provides.

The Ace Digital Commander Receiver-Decoder Combo will work with any of the present day transmitters available, provided they ■ on the same RF frequency. It will not work with the Jerobee, ACL Digitog, or Digitrio.

The unit ■ just as simple and easy and straight forward to ■ the 2 channel. The secret ■ using IC chips.

May be used with the Ace Digital Commander ■ any positive pulse ■. Provisions for three ■ four wire output from the decoder.

Unit in its vacuum formed ■ ■ 1.45 x 1.72 x 1" deep. Weight of the receiver decoder ■ 1.4 ounces.

Kit includes ABS formed case. No connectors ■ furnished. Step by step instructions.

No. 12G18—Digital Commander (1-8) Channel Receiver-Decoder Kit \$34.95

- Available ■ the following frequencies: 26.995, 27.045, 27.095, 27.145, 27.195, 53.100, 53.200, 53.300, 53.400, 53.500

SAVE ON FLITE PACK COMBOS—SEE CATALOG

AS WE PROMISED when the Digital Commander two channel transmitter ■ released, we have kitted the components necessary to convert to three or four channels. Everything necessary ■ perform the conversion is included—the three channel conversion kit contains all the electronic components including the third channel control pot. The existing ■ is used with some modification.

For the four channel conversion ■ furnish all electronic components, another Rand stick assembly, plus ■ attractive new ■ with all holes punched. Unlike the stock two-channel, the new ■ utilizes a top-mounted antenna; the mount is included.



THREE-FOUR CHANNEL CONVERSION

FOR YOUR DIGITAL COMMANDER TWO CHANNEL TRANSMITTER

11G9—Digital Commander 3 Ch. Tx. Conversion	\$8.95
11G10—Digital Commander 4 Ch. Tx. Conversion	\$25.95



Dear Friend:

Ken Willard's Sunday Fighters appear in this issue. As promised, we have the special foam wing sets for them. Package consists of four constant sections with the correct dihedral angle already cut to simplify construction even more.

The Ken Willard Sunday Flyer Wing Sets ■ catalog number 13L65—\$6.50. Try your dealer first. If he does not have them, order direct. Please add \$1.00 postage and handling.

The Sunday Flyer Wings also will be used in the Sunday Glider, another design by Ken, which will appear soon in AAM.

Also in last issue, Fred Marks goes into detail on converting the Ace Commander Digital 2 channel transmitter into ■ ■ or ■ ■ channel rig. ■ elsewhere in this ■ for kits.

Our Digital Commander ■ really pulling in fan letters. We've simply got to share one of many with you. When a product gets this kind of customer response, you know it's got to be good.

From K. V. C. of Nashua, N. H., comes the following:

"Just ■ 'small' pat on the back! Received my Digital Commander 1-8 Receiver-Decoder this past Friday and already it ■ in use.

"I took the instructions to work Friday afternoon ■ read through them; actual opening of packages and work started Saturday mid-morning. The set was completed and working with NO flaws by late evening! Everything went together exactly ■ per instructions.

"Also fly your Pulse Commander. I have an eleven year old School Boy that flies when all ■ fails."

That's all the room we have this time, but there ■ many, many more from satisfied users. When this kind of reaction comes from the field—unsolicited—you know you have a product of which you can be proud.

Fred Marks, the designer, can take a well earned bow. Fred has kept in close touch ■ helping us develop our kits.

On our Pulse Commander: We are almost to the point where ■ can't make them fast enough to meet the demand! The acceptance ■ the flying fields continues to grow.

Join in the fun--fly with Ace!

Yours sincerely,
Paul F. Runge
Paul F. Runge

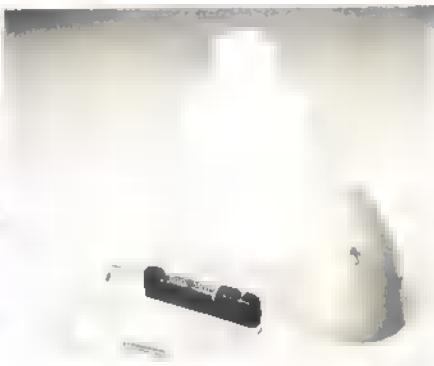
OUR 21st YEAR



R/C EXCLUSIVELY

TELL THEM YOU SAW IT IN— NEW PRODUCTS CHECKLIST

ERIC MEYERS



Rex/New Accessories. Anyone who has had trouble releasing a bomb, parachute or other items will appreciate the release shackle from Rex. This shackle is easy to mount in any RC or UC ship and can be actuated by rudder or elevator controls. \$2.69. Also shown is a two-in. spinner whose cone is held on by two screws. \$1.35. The primer bottle has a two-oz. capacity and features a flip top spout. \$6.95. Rex Model Prod., 3323 Fredericksburg Rd., San Antonio, Tex. 78201.



Virginia Craftsmen/Custom Mounts. Pictured are three aluminum engine mounts available on a custom basis only. These fine mounts are made from 2024 bar stock aluminum and come complete with mounting bolts and wrench. Mounts are very rigid and have accurate 90° angle from firewall. Mounts are not drilled tapped unless requested. Three sizes are available 15, 40 and 50 at \$5.50, \$7.50 and \$10.50 respectively. Virginia Craftsmen, 4902 Embassy Dr., Richmond, Virg. 23230.



AHM/Heat Gun. This very attractive heat gun is designed to be used with heat shrinkable coverings and also aids in the curing process of epoxies and paints. Instructions are provided on how to obtain professional looking results through the use of the heat gun. A special nozzle attachment is included which will provide a more direct flow of hot air. Retail price is \$24.95. Associated Hobby Manufacturers, 621 East Cayuga St., Philadelphia, Penn. 19134.



Prather/Pattern Reminder. This item is handy for the sport modeler as well as the competition flier. It eliminates the Sunday flier's perennial question, "What will I do next?" For the competition modeler this is an invaluable accessory as it eliminates the need for a caller while practicing. Two versions are available, one with the A and B patterns and the other with C and D. \$1.69 each. Prather Prod., 1660 Ravenna Ave., Wilmington, Calif. 90744.



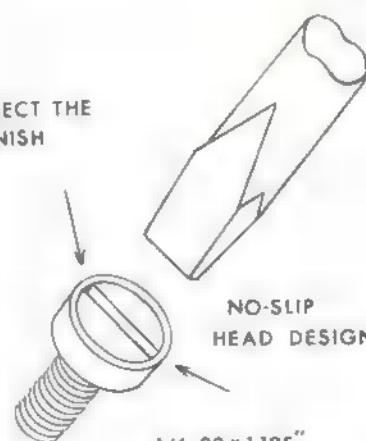
ARF Systems/Acro-Star. All fiberglass version of Lee Renaud's attractive biplane features seamless fiberglass shell with pre-installed bulkheads and fiberglass-covered foam core Glas-Kin wings. Kit also includes machine-cut wood parts and hardware package containing pre-formed cabanes, Dural gear, torque rods, hinges and accessories. A .61 engine may be mounted upright, side-inverted or inverted. Wingspan, 50 in.; 820 sq. in. of area. \$89.95. ARF Systems, 23326 Ladrillo St., Woodland Hills, Calif. 91364.



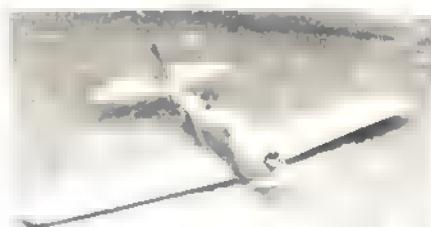
Pilot/SuperStar. Wolfgang Matt's ever popular FAI Pattern ship is in ARF form with a plastic fuselage and plastic-covered foam core wing. Fuselage has retract cutout should builder decide to install retracts. The airplane is very large in accordance with FAI Pattern styles and uses powerful 60 engines and four-to-five-channel radios. A quick way to get into Pattern flying. \$79.95. World Engines, 8960 Rossash Ave., Cincinnati, Ohio 45236.



M&P/Midi Pearl. Winner of four first places at the '73 Nationals, this new A/B-FAI Free Flight ship is a very fast climbing model, yet it's easy to trim. Designed by Bill Chenault, the model is for 15 to 23 motors. It weighs approximately 19 to 20 oz. with a 54-in. span and 450 sq. in. of wing area. Kit includes specially selected wood for light weight and proper grain. Full-size plans are included. \$15.98. M&P Design Group, P.O. Box 338, Lone Oak, Tex. 75453.



Orbit/No Slip. These nylon wing screws have a specially designed head to prevent screwdriver from slipping out of the head and damaging wing or fuselage. The "No Slip" bolts have 1/4 x 20 threads and are 1-1/8 in. long. \$3.39 a pair. Orbit Electronics, 1641 Kaiser Ave., Santa Ana, Calif. 92705.



Sureflight/P-39. In contrast to their huge eight-ft. Cibarium, Sureflight is now producing a 15 size Stand-off Scale P-39 Airacobra. The ship has a 46-in. span and 368 sq. in. of area. Kit has a foam core wing with an all-balsa fuselage. Full-size plans, vacuum-formed parts, preformed landing gear and hardware are all included in the kit. \$34.95. Sureflight Prod., 656 Nome Rd., Valparaiso, Ind. 46383.



Midwest Products/Priming Bottle. A handy gadget for priming engines called the "Pocket Primer" is small enough so that it will easily fit in a modeler's shirt pocket for field use. The container is a flat oval and has a top which seals when it is placed down flat. The plastic bottle has a two-oz. capacity and sells for \$3.95. Midwest Products Co., 400 South Indiana St., Hobart, Ind. 46342.



Better Built/Paint Jig. Here's the easy way to paint model aircraft. This unique and versatile jig will hold 19 to 80 size airplanes (both fuselages and wings) and will rotate 360° for easy spray or brush painting, constructed of high strength aluminum. Lumber is needed to complete the jig. The "EZE-Hold" paint jig sells for \$6.95. Better Built Airplane Prod., P.O. Box 163, Camarillo, Calif. 93010.



Sig/Liberty Sport. Dick Graham's exact scale duplicate of the EAA homebuilt design is now in kit form. This ship meets the proposed rules for the new Biplane Stunt event and should also do very well in AMA Scale and Stand-off Scale events. All-balsa kit has a plastic cowl and wheel pants. Aluminum landing gear, motor mounts and hardware are included. It has a 57-in. wingspan, 45-in. length. Use 45 to 60 engines. \$43.95. Sig Manufacturing Co., 401 South Front St., Montezuma, Iowa 50171.



Fliteglas/Bird-Dog Trainer. An ARF fiberglass kit from Fliteglas Models, this Stand-off Scale ship patterned after the Cessna OE-1 Bird-Dog makes a fine trainer which can be built in a week or two. The fuselage is gel coated olive-drab fiberglass and the wing is foam, pre-covered with 1/16" balsa. The Bird-Dog is designed to be flown with three channels — 15 to 30 size engines. Wingspan, 52 in. \$49.95. Fliteglas Models, P.O. Box 98551, Dept. Molines, Wash. 98188.



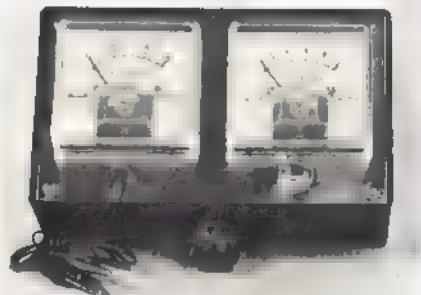
DA Enterprises/Power Charger. Now available as an ideal companion to DA's Power Panel unit is this 12-volt motorcycle battery charger. This charger has an isolated transformer and a charge indicator light. Retail price is \$13.95. DA Enterprises, P.O. Box 335, Hubstadt, Ind. 47639.



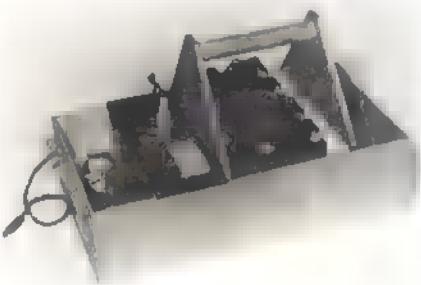
Gas Model Products/Economy Epoxy. Tired of the high cost of modeling? Kwik Set Epoxy with a six-min. curing time comes in eight fluid oz. bottles (12 oz. net weight) and has good penetrating qualities. It does not turn brittle and has a gradual "settling up" time. For those who use large amounts of epoxy, the \$4.95 price tag will represent a large saving. Look for more economy products from this manufacturer. Gas Model Products, 110 Valley View, Southgate, Ky. 41071.



Kraft Systems/Racing Wheels. For Pylon Racing models, Kraft now produces a handy set of extra thin nylon wheels. These are designed specifically for slim profile wheel pants and are used on Formula 1 and Quarter Midget racers. The Formula 1 wheels have a 2 1/4-in. dia. and weigh 1/2 oz. \$1.95. The Quarter Midget racing wheels have a 1 1/2-in. dia., 1/4 oz. weight, \$1.49. An accessory worth several mph on any racer. Kraft Systems, Inc., 450 West California Ave., Vista, Calif. 92083.



Maintenance/Battery Analyzer. This item can eliminate chance of crash due to battery pack failure since a modeler can check out battery condition before going to the field. The product checks current and voltage simultaneously. It also contains a heavy-duty pot to put a load on the pack which indicates whether or not the pack is up to standard. Chart is supplied so anyone can safely test their batteries. \$29.95. Maintenance Engineering, 41 Norwood Terrace, Trumbull, Conn. 06611.



Astro Flight/Field Box. A rapid charge field box is designed to recharge Astro Flight's electric-powered systems on the field yet can also be used to charge transmitter and receiver batteries. Case will hold up to four six-volt motorcycle batteries for charging power systems or two six-volt batteries and a starter for glow engine aircraft. Box contains two additional compartments for field accessories and is in kit form. \$29.95. Astro Flight, 13377 Beach Ave., Venice, Calif. 90049.

OS MAX 40H-RC
DON JEHLIK

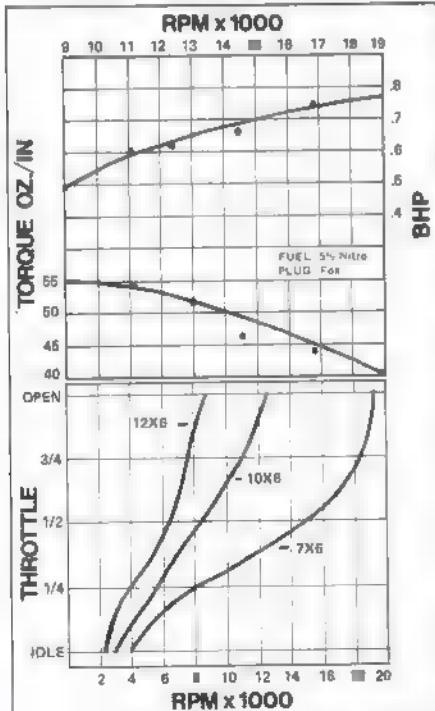
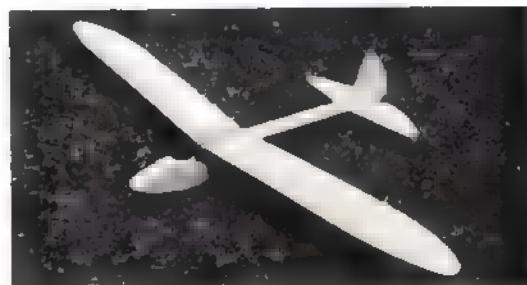
For years, OS has produced engines with, in my opinion, nice external finishes. They have been the favorite of many fliers because of their excellent quality as well. Recently, OS engines have acquired a new image—power. Design changes incorporating the latest design elements in baffled piston engines have made them equal to their contemporary engines.

Inside, the 40 features ball bearings, a really strong bushed rod, two transfer holes through piston skirt, bushed wrist pin holes in piston, Dykes ring, and squish band head. Instead of a muffler, the engine came with an exhaust wiper coupled to the carburetor arm.

Break-in and tests were entirely normal. The engine likes a pretty good exhaust prime. I usually grab the prop and turn it with plug hooked up until it kicks in my hand once. Then one or two flips to start.

Adjusting the needle valve from 4-cycle to 2-cycle settings isn't the same on different engines. The K&B 40 recently tested is an example. When I turned the needle valve in from 4-to 2-cycle, I could then turn it in about one turn leaner. The engine just kept picking up rpm in the 2-cycle mode as the needle was turned in. The OS was different. Peak rpm reached almost as soon as the engine transitions from 4- to 2-cycle. Nothing wrong with the engine; it's just the way it operates.

(Continued on page 92)

BABY BOWLUS
BOB LUHRMAN

The Baby Bowlus is manufactured by Southwestern Sailplanes. It features extensive prefabrication and a pair of pre-shaped balsa wings using the proven Jedetisky airfoil.

Using fast setting epoxy throughout, I completed the Bowlus in 3½ hours. No plans are furnished. The instructions are a bit sketchy. However, numerous photos of the construction sequence provide adequate information for a novice. The builder should construct the Bowlus as light as possible. The boom should be rounded and thinned as much as practicable; little no nose weight needs to be added. The lighter the model, the better its performance will be.

There are several items the modeler should take note of during construction. First, the sides must be trued as they are not the same shape. Secondly, when pulling the pod together (Step Four), wet the sides to prevent splitting. Thirdly, Step One advises planning the radio installation prior to assembly; it is important that this step be followed. I did not plan ahead and it took about two hours to make the installation.

Originally, I planned to cover the Bowlus with MonoKote. However, I decided to go Ultralite, and used two coats thinned dope lightly sanded. Again, removal of as much weight as possible is important. Finished

weight should be 14 oz. or less prior to installation of the radio. All up weight of my Bowlus was 26 oz., with Royal Classic Radio and D&R Bantam Servos.

Flying requires at least moderate lift. Test flights were hand launched from the top of a 75 ft. hill with winds of ten to 20 knots. Control response was smooth with the rudder set for max throw. No unusual flight characteristics or bad habits noted.

My only criticism is the manufacturer's selection of balsa for the wing. In this kit, one panel was made of two pieces of hard balsa and weighed 6 oz. The other was made from medium and soft, very light balsa. It weighed 3½ oz. Weight had to be added to the light panel for proper balance.

Overall evaluation of the kit is good. It is a one evening project. Some fitting of parts is required. However, this was not excessive. Any of the new subminiature one- and two-channel radios would be an excellent choice, but any modern full house radio will fit. The Bowlus is not a high performance glider. It is a rugged first machine for the novice or everyday ship for the Sunday flier.

Specifications: Wingspan—72 in. Wing area—430 sq. in. Length—40 in. Weight—20-26 oz. ready to fly.

THE PILOT SKYWAGON
FRED MARKS

The Skywagon is a blood cousin to a hundred ARF airplanes on the market today. They almost universally share features of vacuum formed ABS plastic, plastic skinned foam wings, plastic covered control surfaces, and poor instruction sheets. We built and photographed steps for the Skywagon for an upcoming book. In writing for Kalmbach to help overcome problems with instructions for ARF models.

The wing is assembled first. Spruce spars are used. Double 1/8" plywood joiners make an extremely strong joint. Joint is further reinforced by plastic joiner that overlaps top and bottom. Use contact cement to attach, but be sure to leave good 1/4" clean around periphery to bond with solvent provided. Be sure to trim and solidly where joiners meet around the aileron control horns.

Insert the stabilizer into fuselage and bond thoroughly before you attach the elevators. A small web at the back must be cut to permit elevator crossbar to clear. If you cut that web BEFORE the stabilizer is inserted, unstable structure and poor alignment could result.

I used silicone rubber to seal all chinks between firewall and plastic; coated engine compartments with epoxy. An OS 35 engine was installed on phenolic mount plate provided. This makes a very neat installation.

I used Su-Pr-Line nylon rods for controls. It's handy and works well. Trimmed with

Trim MonoKote, forgot to seal with Polyurethane varnish, and it "weeped" color all over. Installed universal hardwood mount could use as test airplane for radios. Servos mounted on tray.

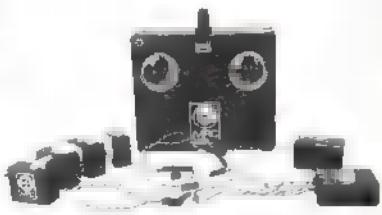
Initial flight tests revealed Skywagon to be excellent intermediate trainer but soft main gear bent every landing. A 1/8 music wire spreader MUST be added. Also recommend adding hardwood block back of firewall; epoxy to firewall and to spruce longerons.

After several flights, severe rudder flutter encountered. The following was found necessary to prevent it. Use st (Du-Bro) pushrod inside nylon, cut a hole in rudder and set in a new hinge below the elevator. Fill the lower part of the rudder with about 1/4 oz. of Sig Superfoam through a hole cut in the skin. Cut a slot in the fuselage tail post for the new hinge and position it. If not already using nylon pushrods for elevator, install that. Now fill the aft fuselage with Superfoam, mixing and pouring in 1/2 oz. batches.

James (12 years old) has found renewed interest in flying as a result of Skywagon. He thinks it is that greatest thing since sliced bread! We think so too. Our above comments are meant to help you get it together quickly and add to its ruggedness. With a .45 and more surface throw, Skywagon would be a comparatively hot bomb; not a trainer then, but don't expect long, durable life.

AM TESTS

MRC MARK V
DUANE LUNDHAL



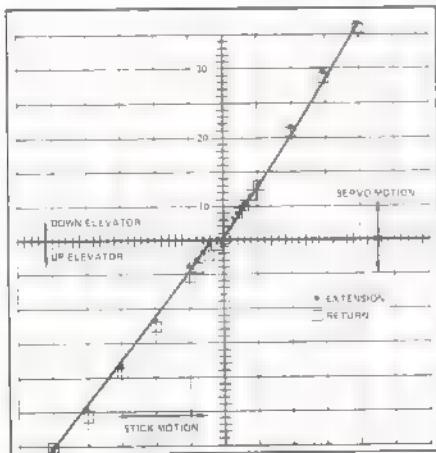
THE SET: The test set is MRC's newly introduced five-channel radio which is aimed at the sport flyer who wants many of the features in top line radios while maintaining a competitive price. The set is made in Japan exclusively for MRC. An interesting switch on the past is the use, in an imported radio, of many American made electronic components. MRC gives a full year's guarantee covering all problems except crash damage with the radio.

TRANSMITTER: The transmitter is of conventional design in both layout and circuitry. NiCad batteries are used and are charged from an independent transformer isolated charger. I am impressed with the neatness and high quality of workmanship displayed in this unit. The RF/decoder board is well laid out and solidly mounted. The placement of the switch for control of the fifth channel is the most convenient I've encountered to date. The stick assemblies are very smooth acting and are exceptionally well engineered. They can be easily disassembled. We discovered this when it became necessary to exchange a stick bale. This resulted from a bale splitting at the point it attaches to the stick pot due to the stresses of a press fit. MRC also discovered this problem and when we contacted them we learned they had already initiated a design change which will incorporate a metal bushing and set screw at this point. It is very encouraging to see this kind of quick action at remedying bugs in a new product. MRC made this change based on three or four incidents out of many hundreds of radios—an indication of their dedication to their customers.

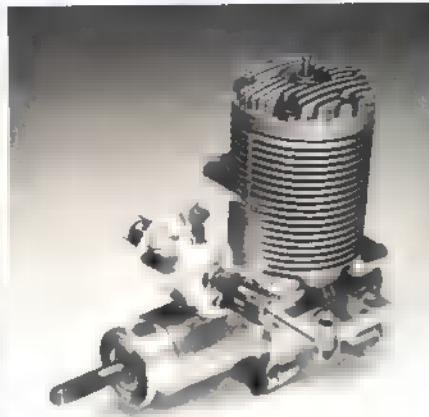
RECEIVER/DECODER: The receiver/decoder are mounted on a single PC board which is, in the TX, well laid out and very compact. The receiver section has a double tuned front end; three IF stages, and the crystal is socket mounted for a quick change capability. The same, incidentally, is the TX with the TX crystal. MRC doesn't advertise this but I would suggest changing unless you have a matched pair and have a qualified person available to check the tuning. The decoder section uses Texas Instruments ICs. The basic circuit has the capability for eight channels, but the board is not drilled or wired for the other channels. MRC gives RX sensitivity 3 micro-volts for full control and selectivity down at 1 kHz.

SERVOS: Again, a Texas Instruments IC is used in the servo amplifier. This unit contains the final motor driver transistors internally. There are 16 external discreet com-

(Continued on page 92)



WEBRA 61 RC
DON JEHLIK



This Webra 61 is made in Austria. It has more than a passing resemblance to the HP 61. The main transfer ports are much deeper, with greater volume. The third or boost port is cut high in the side of the piston. This then makes a Dooling style transfer of this port. Earlier boost port engines placed the port almost at the bottom of the piston.

The low tension Dykes piston ring is pinned so it can't rotate. This allows the port windows of transfer and exhaust to be cut wider in the sleeve. Hence, just two rectangular exhaust ports and a port for each of the three strokes.

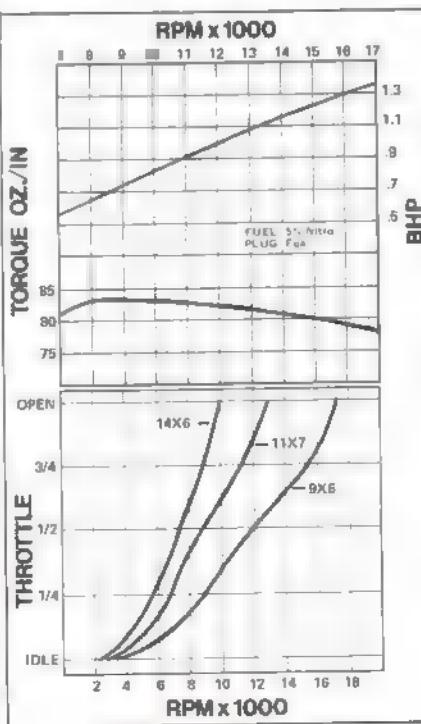
After break-in, I judged the engine to be of acceptable quality and proceeded with the test. I found the engine hard to hand start cold without a healthy exhaust prime. I took the muffler off, primed, and put it back on. Hot starts just needed a squirt in the carb.

The muffler is attached by a hose clamp. It doesn't key on the exhaust and has a tendency to move a little. Power loss with the flow-thru muffler was a little under 200 rpm on 11 x 7 prop. Rpm was 13,000 on the 11 x 7 and 14,100 on 11 x 6.

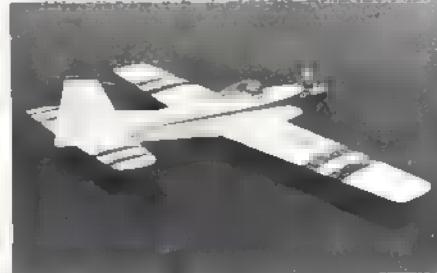
The engine was well made. I detected a slight taper and out of roundness in the sleeve, but not enough to have a large effect on performance.

The Webra is similar to the K&B 40 recently tested. Quite a flat torque curve with

(Continued on page 93)



TIGER TAIL
FRED MARKS



The Southern RC Products version of the Tiger Tail is available in two versions: deluxe has wing cores covered with balsa/silk filled covering called Gatorhlide; fuselage is 70 percent complete. Standard version which we chose has everything needed to cover wing, construct the model and cover it with Southern RC Products Skylift.

All balsa parts are band sawed to shape and are quite smooth. They fit perfectly. The plans are quite simple and rather minimal, but a complete instruction booklet is provided. This ship is for experienced builders and fliers. It is the full house competition model that designer Ron Childay flew to the 1971 and 1972 National Model Meet championships. In addition, this ship took second and third places in the 1973 meet—an outstanding record proving the design potential.

Our first step was to cover the foam wing with the stack of balsa sheets provided. We stacked, taped, and pinned the sheets together and used a radial arm saw to trim them all simultaneously to precise, straight, parallel edges for butt joining. The sheets were joined using model cement; white glue or Titebond is too hard to sand, and joint ridges will show. Bond to skins using Southern Sorghum contact cement provided.

Fuselage and tail assembly are straightforward although the normal precautions should be exercised to insure alignment. The wing fairing blocks are cut to approximate cross section. A Kraft glass filled motor mount was used to restrain a Webra 61. Maple blocks 3/8 sq. x 5" were inlaid in the foam and epoxy applied before the wing skins were laid on. No. 8 by 1/2" sheet metal screws were used to attach the ROMAIR pneumatic retract gear to these rails and to the firewall. If retracts are used, it is necessary to cut a well in the chin block under the nose and in the wing leading edge. Reinforce the wing leading edge with fiberglass when the dihedral joint is reinforced.

A five-channel system installed, fifth servo operates shuttle valve of ROMAIR retract system; need not be 180° servo. Freon tank installed in aft fuselage. Twelve oz. slant top fuel tank used up front.

Flight performance is all one could ask from this fine competition model but one must have a real "going" engine for it, as for all these large competition models. Has a lot of wing area. Can be slowed down quite well for landing. Capable of entire AMA and FAI pattern, I still like balsa!

Overall evaluation is that Tiger Tail is a well engineered kit, balsa is high quality, workmanship is excellent, and the bird does everything claimed for it.

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LEW McFARLAND ON CL

PAMPA: The Precision Aerobatics Model Pilots Association may get to administer its own event at the NATS (probably in early August at Lake Charles, Louisiana, though it's unofficial at this writing). This will — the Stunt fraternity will have a chance to remedy some of the so-called shortcomings of the past. Keith Trostle has tentatively accepted the post of Event Director, and the rest of us will be expected to pitch in and do our part to back him up. Most of the burden for 1972 and 1973 was carried by Dick Williams (aided by wife Donna) and Bart Klapinski. They did a very commendable job despite the lack of support, the absence of trained judges and other resources. Thanks! Let's put the burden where it belongs, and prove ourselves to AMA.

By press time, the First Annual PAMPA Precision Aerobatic Symposium will have been conducted in conjunction with the King Orange in Jacksonville, Florida. Les McDonald, PAMPA Vice-President, with able assistance of Tom Dixon and Jerry Ross, was to present topics such as: Pattern Flying, Judging, Judge Certification and Construction. A question and answer session is also scheduled. An advance thanks for making it more than just another contest.

Team Stunt: The Lexington (Kentucky) Stunt Team has extended a challenge to any other club group. The team will — made up of a fixed number of mixed age groups, e.g., two Open, two Senior and three Junior; the total score will determine the winner. This challenge is also extended to the NATS or any other contest where like numbers and age groups can be matched—Any Takers? Remember, this must be an organized club group from one geographic area.

Mid-America: The Mid-America Championships (pending sanction approval) are set for the two-day Fourth of July weekend. Stunt has always been strong at this Lexington, Kentucky, contest. However, even more — phasis is planned in 1974 with the addition of Novice — as well as the usual division of Expert and regular AMA. Stand-off Scale will also be added and will, no doubt, take — a Stunt flavor. A Semi-scale Stunter will — become a dual purpose plane now, so maybe there — some other fringe benefits for those who like the scale type. (Right on, Al.)

I am still 39, but a few years ago, I initiated an "OVER 40" Trophy in the Mid-America. Art Adamis in did not show to defend his "OVER 40" title, so Bob Galdini came out of retirement and won hands down over three qualified contestants. (Sorry about letting your age old, Old Man.) I hope — get Bob away from his new sailboat for some contests next summer. He's a talented and enthusiastic competitor, a credit to our sport.

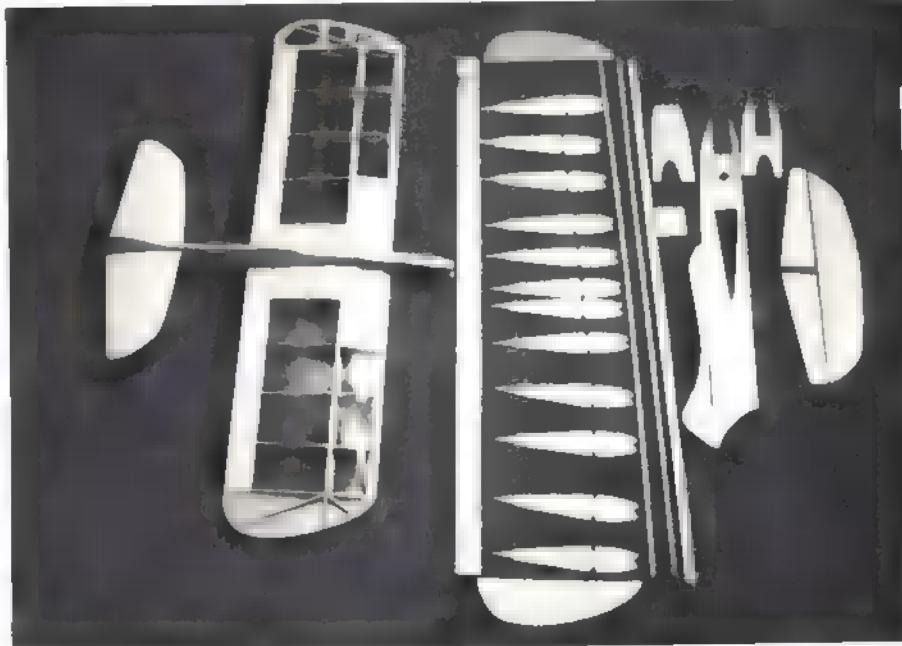
Snow Stunting: Local weather conditions have caused the original "Ruffy" (1953) to — pulled out of attic retirement—it has attached skis! Flying off snow isn't difficult and can — real fun. Give it a try.

Skis are easy to construct from two $3/4 \times 3/4 \times 18"$ balsa beams, capped on the bottom with a $3/32"$ or $1/8 \times 2 \times 18"$ balsa sheet. For strength and durability, coat the bottom with resin and a thin layer of glass cloth. Keep them light.

Attach the regular gear to a piece of tin stock bolted to the beam. A $3/32"$ wire running from the $3/4$ point on the ski beam to the top of the conventional gear serves as a flexible but simple brace. See drawing.

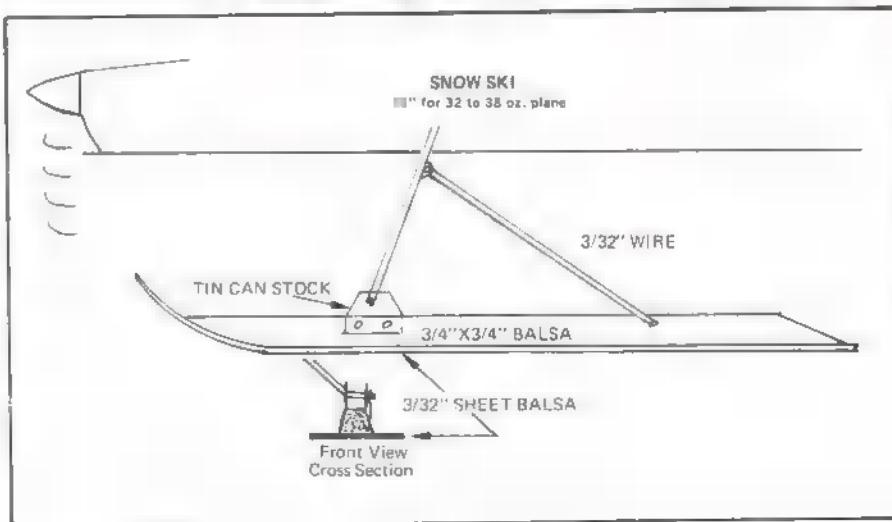
For The Beginner: What planes should the Novice flier choose? No absolute answer for this due to variables like age, economics and availability of help. The beautiful picture on a box or a big wingspan should not outweigh the need for good flight characteristics, low price and ease of building and repair. The ideal engine range is between 30 and 46 because 90 percent of all competition planes fall into that category (unless Dick Mathis and Randy Hancock prove otherwise). Let's hear from those who have had success with the smaller ships.

Slow Combat has gained in popularity, and some planes have been produced which fit the criteria, e.g., M&P "Mongoose," Filte-Line "Fury" and X-CELL "Sharkbat," not to mention many local variations. We may see



The Sharkbat, a Lew McFarland design, is an X-Cell kit. Finished model was covered with FasCal. (Photo by designer)

Ed Karchinski seems to be thinking, "Boy, you really polished that whole thing." — Andy Lee puts that final touch on his Sunshine Stunter. (Photo by Bill Bass)



(Continued on page 93)

DON LOWE ON RC

Those Who Dare: Many have noted the placings at the last RC Pattern World Championships and wonder how Bruno Giezendanner finished so far down the list (28th). It's hard to imagine a two-time winner being that far off the pace. A look at the rather radical aircraft design which he flew may offer at least partial explanation.

It's difficult these days to stray very far from the norm and remain competitive. Competition craft are usually tweaked very carefully, with minor modifications from year to year, to improve on weaknesses noted in some particular maneuver. Very rarely do the top performers move out with bold innovations or changes. Of course, this tends to stagnate design (and rules) and it's very difficult to competitively evaluate wild new ideas. Every now and then, a top competitor takes that step and gets slapped down. I think that we all owe a debt of gratitude to those who try; otherwise things would never change.

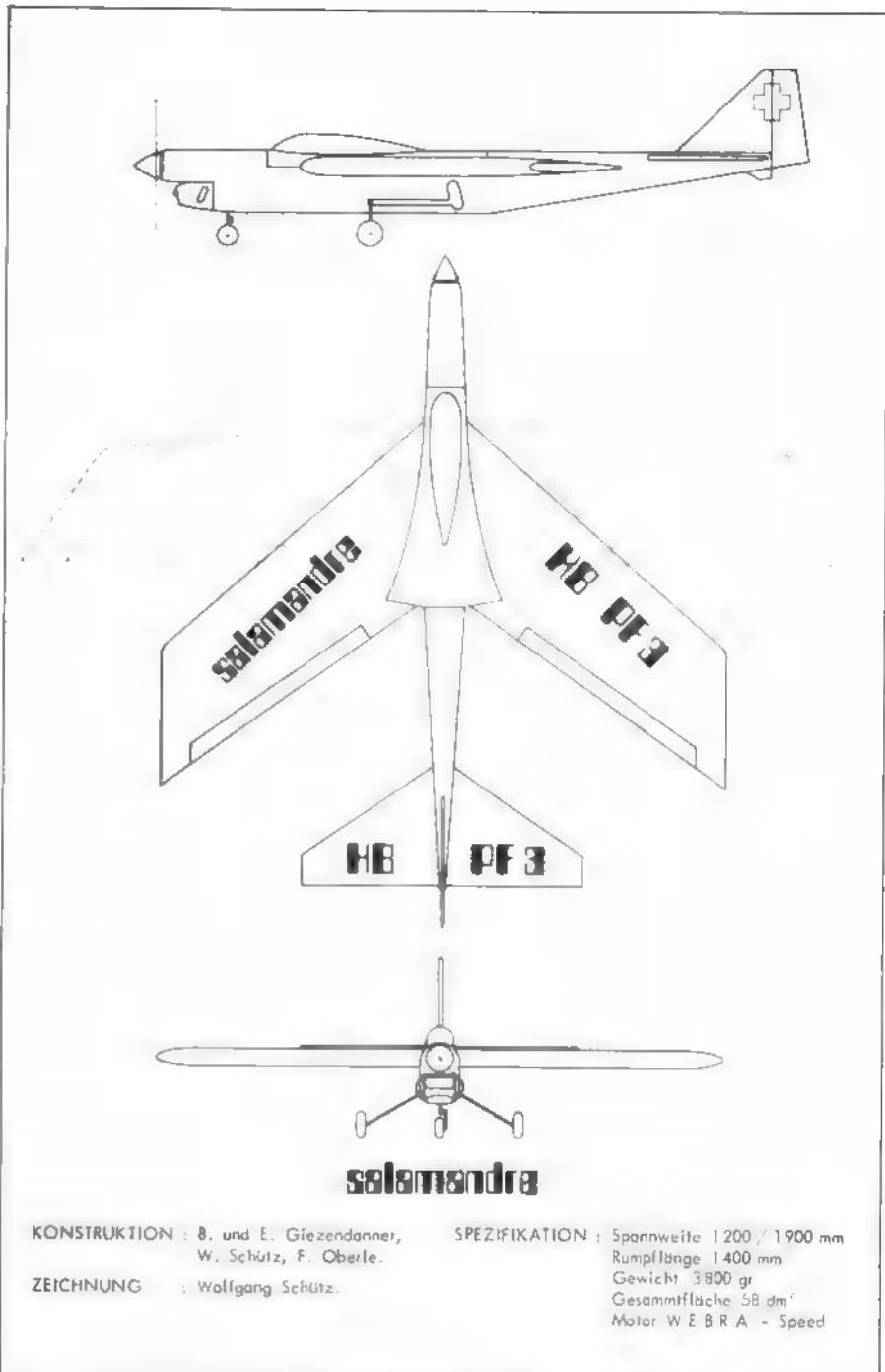
Bruno's design, although possibly a bit extreme, encompasses good thinking. By sweeping the wing back and forth, he can ideally locate the CG for each maneuver. Rolling maneuvers favor an aft CG; pitch maneuvers are best with a forward CG. Sweeping the wings aft adds lateral stability for grottier pitch maneuvers. Who knows, maybe a guy could learn to sweep the wings fore and aft as he flies through a combination maneuver such as a Cuban 8. Do you think a computer and automated control would be required? John Agee flew a variable CG airplane at the NATS last year. He and others attest to the fact that it improves maneuvers.

Would you believe that Bruno was faced with possible disqualification of the design because the rules state that the aircraft must be of "fixed wing" design? Personally, I like swept wing airplanes (as you may have noticed with my Phoenix designs). My initial cut was much more radical than the present design, but I have tweaked it over the years to its present configuration. By the way, did you notice that Tsugataka Yoshioka of Japan, the current Champ, used a swept wing design? Maybe that had nothing to do with it, but it didn't hurt—right?

Remember Tom Brett (previous International Champion)? He, too, used a design that was somewhat different—the Perigee. After his win, he tried some very radical designs before retiring from competition. Maybe they aren't all successes, but at least we have some idea of what not to try.

Contests And Such: As I sit and write this marvelous manuscript, it is deep in December and I, and the rest of the modelers, are wondering whether we'll have enough gas to get to contests in '74. By the time you read this, we will have a better idea. But, what the heck, let's advertise a bit for our Canadian friends anyway. A note from Nino Campana way up in Canada land (Sault Ste. Marie, Ontario, to be exact) reveals competitive doings on May 25 and 26 at Sinclair Park, Sault Ste. Marie. They plan to hold Scale, Pattern and Fly-for-Fun events in the annual Upper Great Lakes contest. For further information contact Don Flannigan, 41 Edinburgh, Sault Ste. Marie, Ontario, Canada. Now if I can only get some gas...!

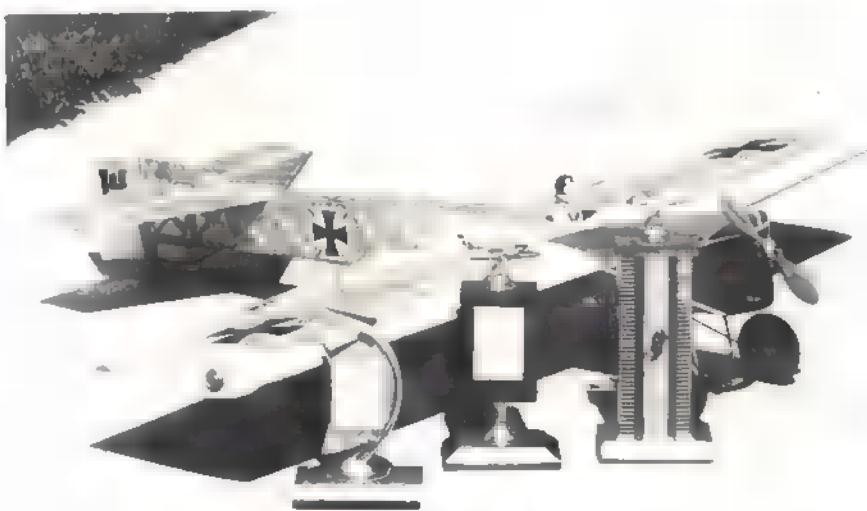
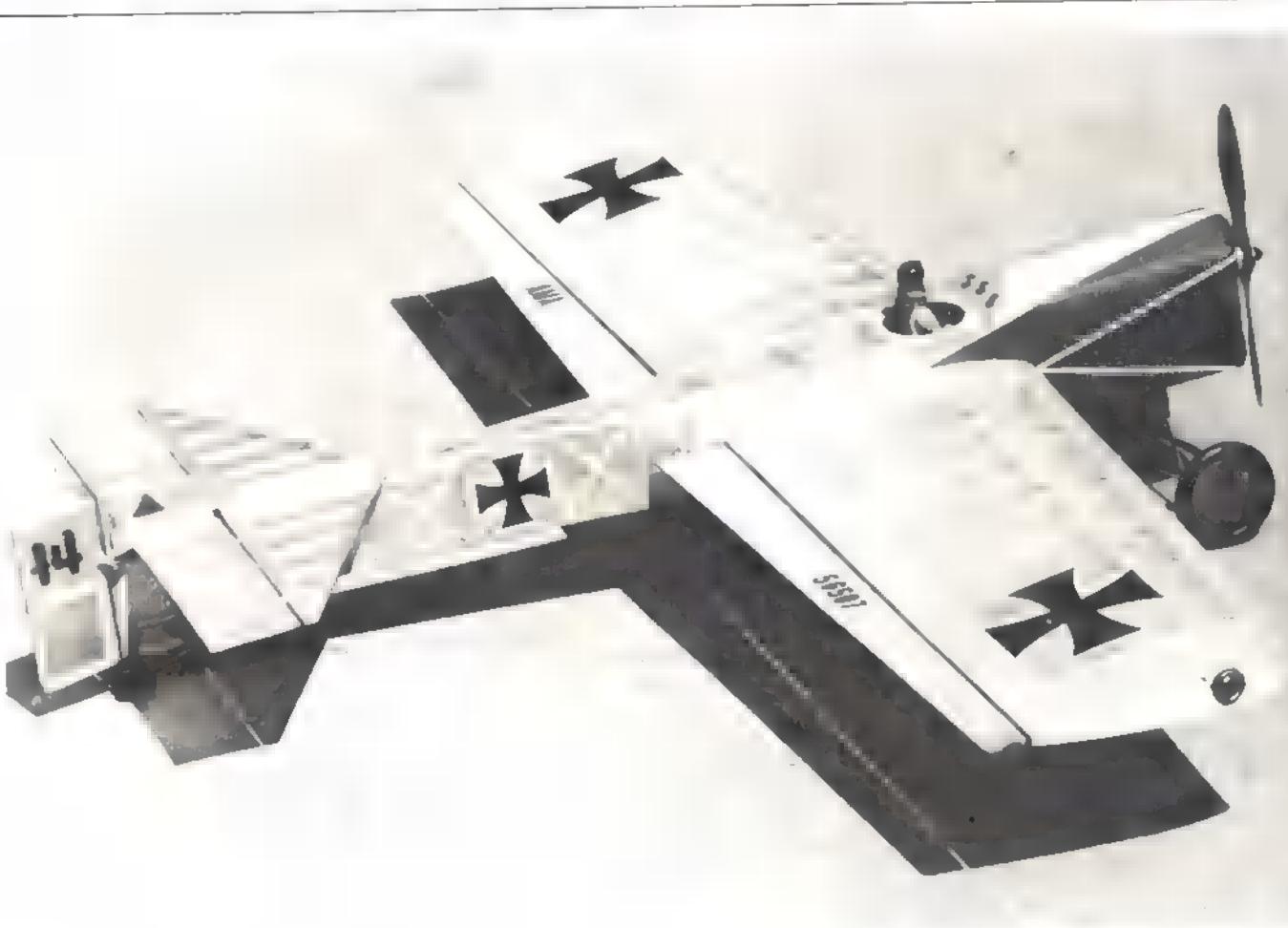
(Continued on page 94)



BELOW: A pair of Salamanders by Bruno Giezendanner. Both models have the 45° sweep here. The three-views (above) give a better idea of some of the innovations involved.



Das Kraut



TOP: Form follows function—ain't necessarily so! An eclectic design, Das Kraut shows a hybrid form extrapolated from impressions of German aircraft. Try roundels in place of the Iron Crosses and the model transmutes into a British-looking bird. ABOVE: Das Kraut is very contest capable. Author has placed first in every contest he's entered! Trophy at left is from '72 NATS.

Das Kraut is a new breed of stunter designed for the novice builder, but with winning capabilities. It took two other models and much experimentation, but finally the right wingspan and the right moments produced a competitive design without major construction problems. The airplane looks different and receives above average originality points. The finish is not as fancy as some other planes, but the originality points make up for this. I have received many compliments on the design; it always makes a good impression on contest judges.

I also have trophies to back up the capabilities of the plane. I placed first in every contest in which I entered during 1972, including Junior Class at the '72 Nationals—a total of nine trophies for the airplane in one year.

Before construction, I have a few tips that have helped make this a highly competitive model.

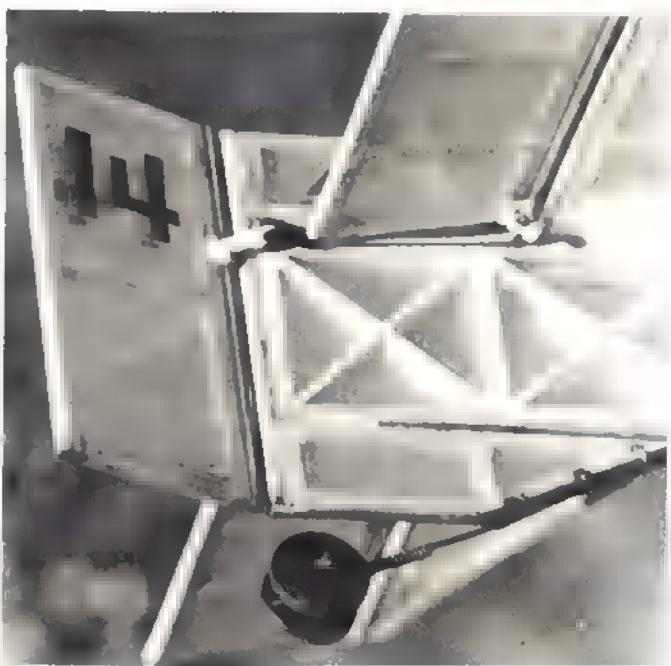
LANDING GEAR: The landing gear is removable and has adjustable springs for different landing surfaces. A hard landing, or too large a loop, can bend the gear. If the gear is removable, rebending the wire is much easier and the whole landing gear can be replaced if necessary. In addition, finishing a plane

(Text continued on page 66)
(Plans on page 50)

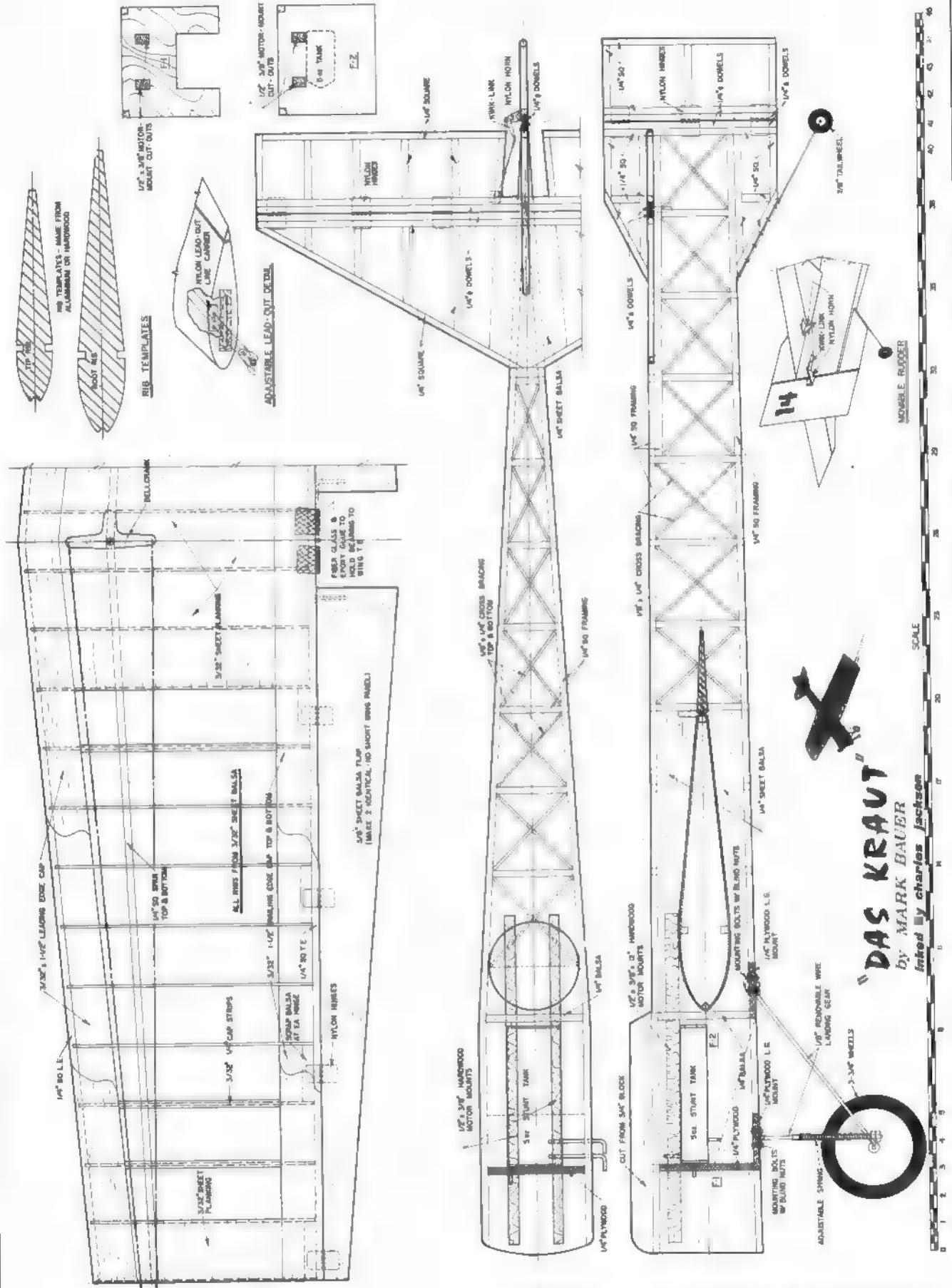
It looks like an oldie and flies like a goodie.
A stunter with WWI lines, Das Kraut is a trophy-winner
in any circle. / by Mark Bauer



ABOVE: Add a pressure fitting to the muffler and a slice of fuel tubing—the result is almost instant engine reliability. For "realism," don't neglect the pilot or Williams Bros. wheels. BELOW: Landings with Das Kraut are almost never rabbit hops. Shock absorption system keeps things smooth and is simple to build. The entirely removable gear system is a nice feature.



ABOVE: Rudder trim linkage is all external for easy adjustment. Tandem tail-wheels lend a distinctive touch to the model.



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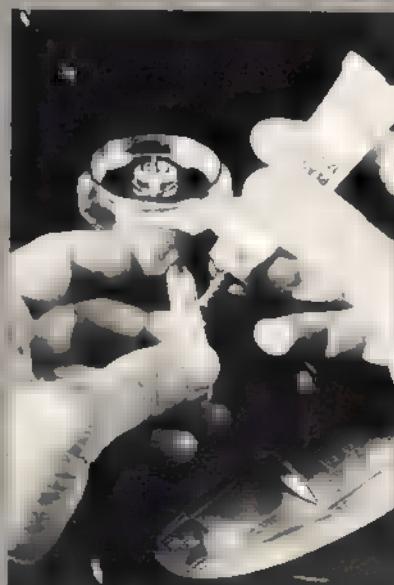
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SPECIAL INTEREST

HOWARD RUSH ON COMBAT

Hop-up Contest: The best engines tested in our hop-up challenge were Supertigre G.21s reworked by Tom's Custom Engines (Tom Upton). His "Stage V" clocked an honest 125 mph on a Nemesis II at Oshkosh with .018" lines and no whipping. An earlier "Stage III" was good for 123.

The Stage V has a highly stuffed crankcase. The rear sides of the crankpin and con rod are shaved and the crankcase is turned down so that the back door may be inserted about .030" deeper. The top of the bypass and the notch in the back door are filled with epoxy. The cylinder exhaust port is raised at least .060"—much more than the currently fashionable .015". The stock head is replaced by a two-piece assembly with a double-dent combustion chamber. Tom attacks his engines with hammers and other brutal instruments, but these two were the best fitting Supertigres I've ever seen.

The only engines that compare with Tom's are John Gladfelter's Supertigres. They may be as fast, but I've never timed them on my own airplane. John replaces the head and back door with parts of his own design and meticulously matches engine dimensions to his own specifications.

The best Fox tested was a 36X BB by Phil Granderson and Tom Strunk of the Jive Combat Team. It pulled the test airplane consistently at 118 mph.

Peadon Wins Southwestern: The Southwestern Championships held on Labor Day in Dallas may be the toughest Combat meet anywhere. There are usually as many entries as the Nationals and most of them are Texans which makes for mighty mean competition.

Sources at the highest level of Snider Swamp report that Tom T. Peadon took Combat at the Southwesterns this year. Tom is a free-fighter; this is his first year of Combat competition. Tom reports that his primary tactic involves show business.

Shortages: Predicted petrochemical shortages could lead to supply problems for our fuel ingredients. It might pay to stock up on nitro before the Drag Racing season gets underway.

In What Would We Burn Fuel? Nobody has made a Combat engine for over a year. Fox is planning a new engine, but production problems arose after the old tooling had been altered, so neither old nor new models are being made. Supertigres? Let's hope their two-year lapse was for crankcase development. Cox and K&B have both experimented with 35 designs, but probably won't build them. In Dayton, Ohio, Bill Keller and Tom Upton are independently considering manufacturing Combat engines. Also the first RAF 36 is two years late. The time is ripe for any motor maker who likes money to turn out large quantities of Combat engines.

Russ Green is carried off the field after his second consecutive Nationals win.



Bill Rutherford makes his getaway as Russ Green launches his Supertigre-powered Sneeker for the final match of Senior Combat at the 1973 NATS.

Save Your Sight: Baby-pacifier and pen-bladder fuel tanks are notorious for spraying pressurized fuel in modeler's faces. I saw it happen several times last season. Pit crews should wear safety shields or protective goggles. Contest Directors should see that a large jug of water is kept at the Combat circle for flushing contaminated eyes immediately after such an accident occurs. And everyone should be especially careful when filling tanks. Save your eyes for reading AAM.

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JOHN BLUM ON NAVY CARRIER

Blueprint Reading: Continue to familiarize the uninitiate with basic blueprint reading begun last month. We've added new lines and terms, and enhance this with a simple sketch. Last month, we listed the following lines: (1) hidden, (2) center, (3) object, (4) dimension. To this is added the section line and the broken line. The sketch illustrates all of these in actual use; it also illustrates a new term and a new facet. The sketch shows a rectangular object with two holes, one completely through and one partially through, plus a depressed rectangular slot. Note that the front view shows all openings with hidden lines, since none of the openings are actually visible in this view.

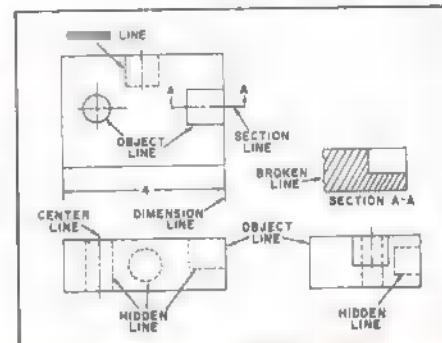
Next month we'll have a broader description of why the openings are shown in each view.

Here the term "section" means a section of the object, used to illustrate a portion. The section line is drawn through the desired area, and arrows show direction of sight just as if we break or cut the object at this point.

Class I and II Japanese Judys by Terry Herron of Wichita, Kansas. Control lines attach inside wing.

This is done by the draftsman when he wishes to illustrate more fully detail hidden in the normal views. The area exposed when the imaginary "cut" is made through the object at the section line is then cross-hatched with slanted lines. This creates distinction within the object between the area "cut" and that not "cut." There are times when the slanted lines are not used. This instance is exemplified in a model drawing which shows a cross-section of the fuselage to illustrate shape. The

(Continued on page 103)



Joe Tracey's (Elkira, Ohio) Profile Carrier came apart during this flight. Note aileron is disengaging.



No, it's not a bird, it's a plane, or Superman. It's just the Kansas City Star, Jim Finally, giving Terry Herron's Class II winner, Japanese Judy, a little help on takeoff.



FRED MARKS ON RC

From The Ohming Pigeon: Helmut Hess recommends the following in applying mylar trim numerals or insignia:

"Cut a piece of plastic as used for windshields, a bit larger than the lettering. Spray one side lightly with your favorite cleaning solution. Peel the MonoKote trim lettering from its paper backing and place it on the plastic with the adhesive side up. It will lightly stick to the plastic sheet. Position the whole affair on the exact spot, then press lightly. Presto—instant perfect lettering."

The photo presents our own method for applying mylar numbers. Put down a tape line to keep them straight. Use backing from MonoKote or the above plastic, or simply vellum tracing paper. Tack the lower edge down at the edge of the tape, carefully slide the plastic up and push the numeral down. No frustration!

Here's another trick to help you make your own fancy markings. Draw the figure you choose on tracing paper (i.e., anything you can ~~see~~ through). Lay a piece of transfer paper (carbon paper) on the MonoKote back sheet; place the drawing over it with the paper turned over so that the drawing appears backward. Then trace to place the drawing onto the backing sheet. Cut the figure out and put it in place. The photos show how it's done.

From The Victory Roll: "What To Do If Your Model Crashes Into Water" by Ken Reber.

A recent experience involving my plane in an unauthorized crash into a farm pond taught me a few things about RC gear. My plane went into the water on a Tuesday and was not recovered until Saturday, ~~so~~ I'd say that it was soaked. My first impulse was to crate the whole wet mess (receiver, battery, servos) and return it to the manufacturer (Heath). . . . In an attempt to save some summer flying, I did the following, which resulted in a radio working as good as new and at little cost to me:

(1) Don't be afraid to tackle a wet radio; these things are tougher than you'd imagine.

(2) My system was equipped with three GD 19-4s (KPS 9) and one GD 19-41 (KPS 10) servos. The 19-4s are larger and easier to work on. They use air dielectric capacitors.

(3) I first removed all cases and covers and set the parts in front of a dehumidifier to dry. This got rid of the moisture in the ~~the~~ capacitors.

(4) I tore the case off the battery pack, checked all the internal connections and replaced the plug, repotted and sealed the battery. I then stuck it on a 12-hr. charge. (I'd recommend cleaning it up, recharging, and checking BEFORE repotting. F.M.)

(5) When the receiver and servos ~~are~~ completely dry, brush thinner on all printed circuit boards to remove oxides. Wipe carefully with a cloth and do a D.C. continuity check on all wires to the power plug. I then cleaned the plugs and sprayed them with a tuner cleaner (available in TV repair shops.)

(6) The switch harness was then repaired and the switch ~~was~~ sprayed with cleaner and exercised as were all the connectors. Do a D.C. check on this also.

(7) The servos were done last, but took the most time. As mentioned earlier, the boards and plugs were cleaned and lubed. D.C. checks were made. The motors were taken out of the gear train and subjected to about five min. running under 4.5 volts in each direction. The gears in the servos were removed and cleaned. If rust is found on the gear pins it may ~~be~~ necessary to replace them.

(8) The entire system was reassembled and tested again. As with any new system, a range check must be made and any faulty components replaced."

Ken, it could have been worse! Reminds us of a true story about a fellow who suffered ~~a~~ engine failure in his light airplane. He spotted a ~~beautiful~~, perfectly flat field long enough for an emergency landing, only to find he had landed in a huge sewage field (in common ~~by~~ by some small municipalities) which is always covered with beautiful green growth. As we understand it, ~~he~~ climbed on the wing and began screaming, "Fire! Fire!" When rescued, he was asked why he screamed fire when there was no fire. He retorted,

"You don't think anyone would come running if I hollered, 'Sewage!'"

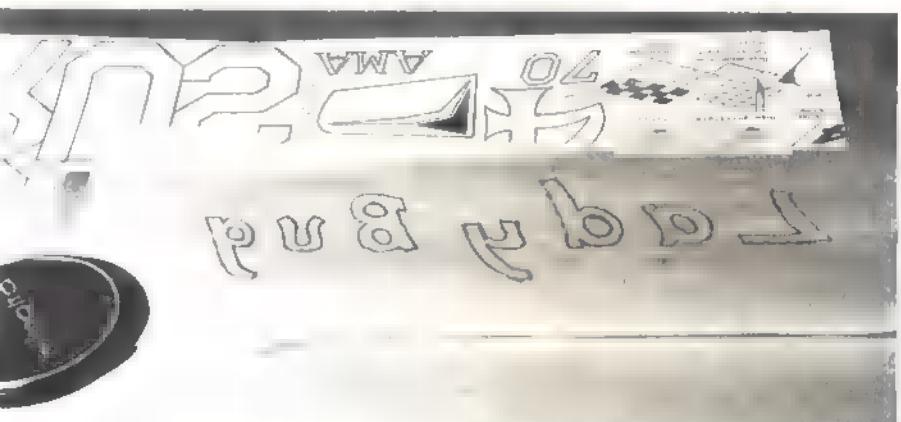
From The Palm Beach Aeronauts News: "Plumbers No. 2 cement for plastic PVC pipe available in most all hardware stores ~~is~~ an excellent and extremely strong cement for ~~when~~ when assembling plastic parts in many of to-

day's models, especially the ARF types. A small can with an applicator costs about \$9.5."

This tip comes from Claude Butt who also recommends that the plastic parts be given a light sanding prior to being joined with glue. Properly joined parts are almost impossible to separate.



An easy method for putting mylar numbers in place.



Drawing positioned for tracing.



The original drawing with ~~the~~ tracing ready to cut from the MonoKote.

RC Super Chipmunk

KWIK BILT*



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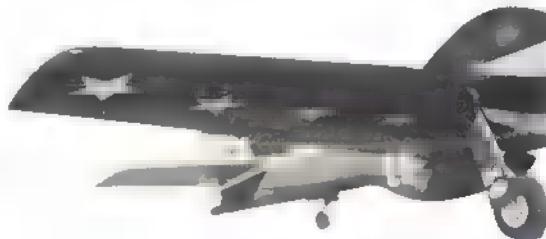
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Molded Nylon Control Hinges

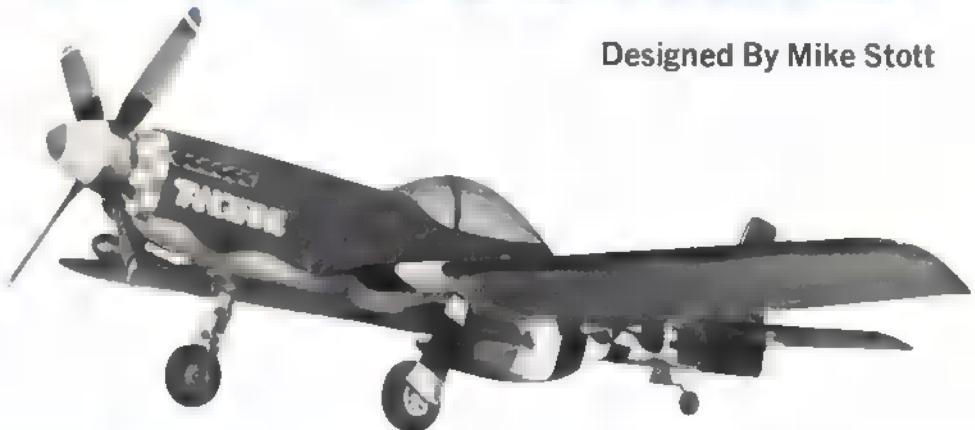
Molded Nylon Control Horns

Tuf-Steel R/C Links

Double-Coated Servo Tape

BILT* P-51 MUSTANG

Designed By Mike Stott



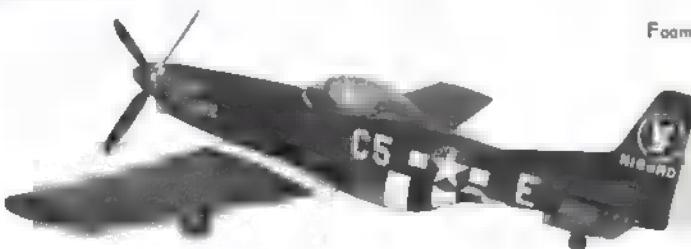
ODUCING A NEW CONSTRUCTION TECHNIQUE:
ODED PLASTIC WING SKINS WITH PANEL LINE DETAILING

system pion-
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This is quick-
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SIG
KIT KBRC-2

\$42.50

ENGINES: .45 - .60
WING SPAN 64"
WING AREA 700 Sq. in.
WEIGHT 7 Lbs.



RC SPORT SCALE AND PATTERN

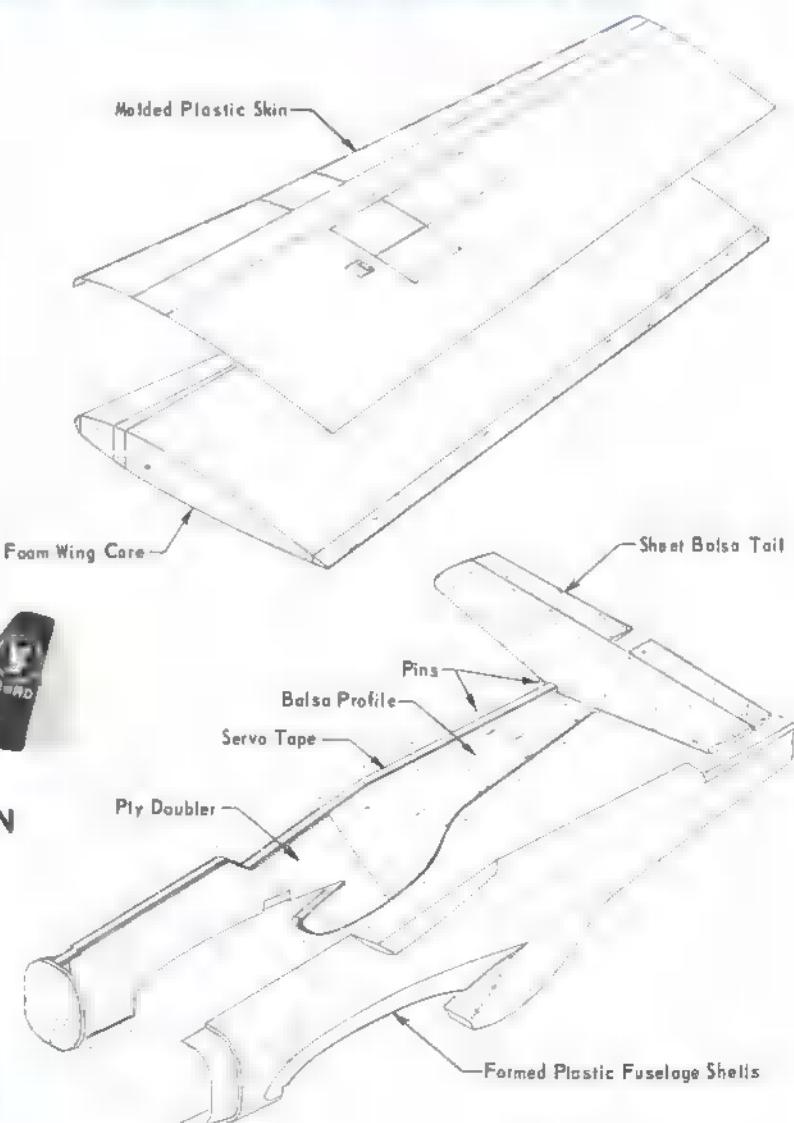
Drawings

Detail
S:

Builds Fast!

Flies Like A Pattern Ship!

Looks Like A Super-Scale!



*Patent 3699706
Other Patents Pending

Electromotive Power Plants

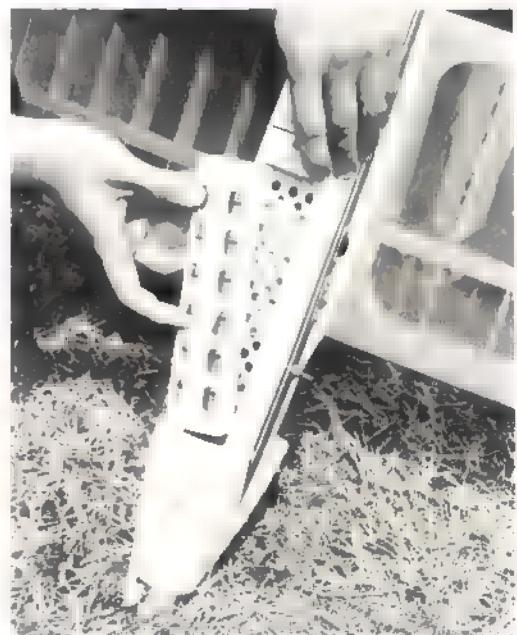
Whether it be a revolution in terms of noise or the energy crisis, major manufacturers are striving to provide modelers with a new way of doing our thing. / by Larry W. Hoffman



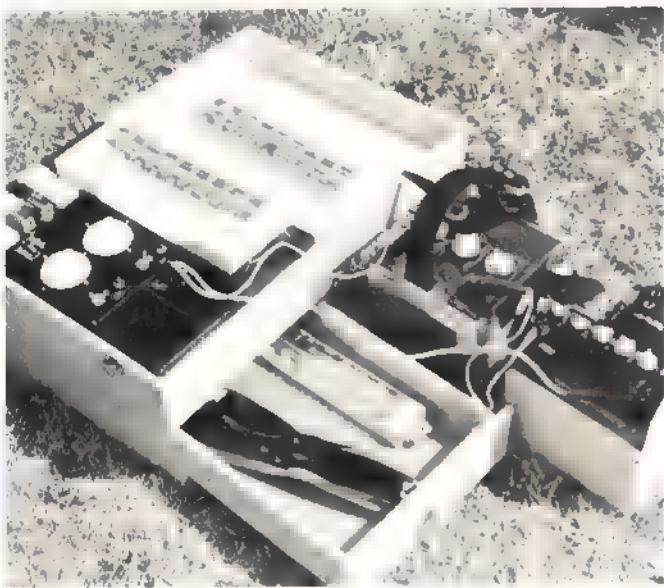
Kenichi Mabuchi (left) and author's son, Kenji, hold prototypes of electric-powered models. Mr. Mabuchi's model is a full-house bird, while Kenji's is three-function. Note large props and air scoops.



Power system installation is a snap-in battery tray. Fourteen batteries drop into the well-ventilated access hatch of the glider (right), or they can be transferred intact to the cabin of the multi (above).



Photos by Larry W. Hoffman



Charging modes — either elaborate, where the master charging unit at left — charge several battery trays simultaneously, or the simple portable charger which operates off the — cigarette lighter.

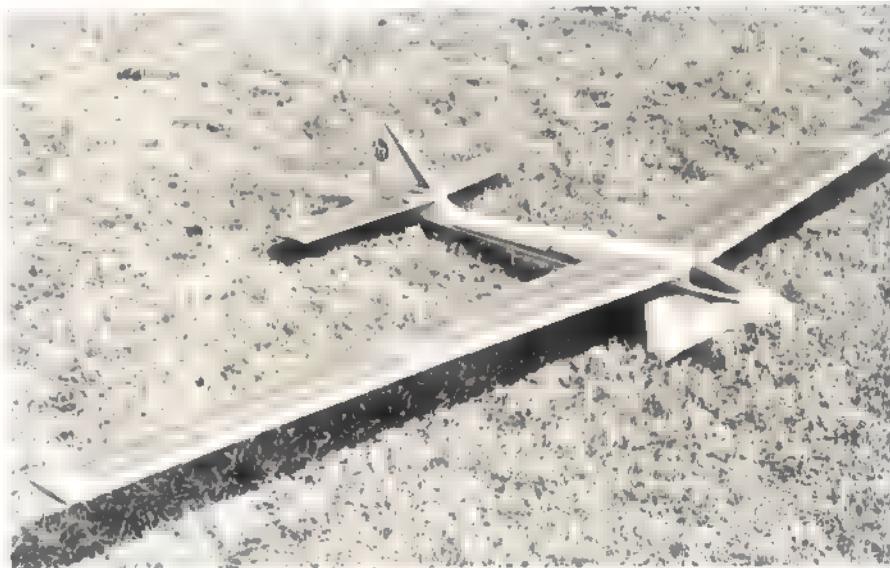
Lately, it has become old hat to hear about modelers the world over losing their flying sites because of excessive noise. It is equally common, however, to hear about the many interesting and constructive muffler designs currently under development. Even better mufflers are needed to get around this insidious problem of noise pollution.

Articles and bits-and-pieces of information relating to an adjunct to the hobby/sport of radio control flying have appeared in trade journals. Although not a new idea, ELECTRIC-POWERED FLIGHT offers the path of least resistance around the noise difficulties we all face. The biggest problem with this form of propulsion has been the tremendous power required to drive our flying machines around the sky at regular speeds and for the durations to which we are accustomed using our present power plants.

Work is undoubtedly underway in many countries to develop electric power plants efficiently and economically. However, many are probably not aware of the efforts being made in Japan by the world's leading manufacturer of miniature DC motors, the Mabuchi Motors Company.

American modelers are familiar with the Mattel SuperStar that operates with electric power from rechargeable batteries. The motor for this plane is made by Mabuchi. It is one of many with which they are presently experimenting to realize the technical requirements for greater duration and power. During a visit to the Mabuchi factory — Tokyo, I was treated to a complete tour of the manufacturing facilities and the experimental laboratory Mr. Mabuchi has set up for building and testing motors and planes.

The factory is a modern structure built within the last three years. Along with two other factories in Japan and one each in Taiwan and Hong Kong, the total daily output of miniature DC motors is approximately 800,000 units. Sixty percent of total production feeds the export market, where motors go in-



Two adaptations of electric power. Glider (above) has folding prop to clean things up for better duration. The free flight model (below) — compact and sports a dethermalizer module.



(Continued on page 86)



TOWER

P.O. BOX 543

CHAMPAIGN,

RC POWER KITS . . .

AERO PRECISION: RETAIL TOWER

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Tiger Tail Deluxe	115.00	97.50
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Falcon 56	22.95	15.95
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Spitfire	\$64.95	\$42.50
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GEE BEE:

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Comanche	55.00	35.00
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Wing Master	\$29.95	\$23.95
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LANIER:

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Caprice	56.95	41.25
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(All Lanier are almost ready to fly)

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CARDINAL SQUIRE

Span 74" Engine .40 to .60



RETAIL \$54.95 TOWER \$37.95

MACO JET STAR

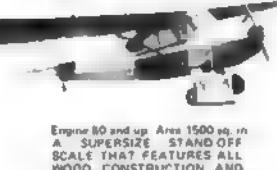
Span 66" Engine .56 to .60



RETAIL \$54.95 TOWER \$36.00

BUD NOSEN

9' Span Aerocraft Champ



Engine .60 and up. Area 1500 sq. in.
A SUPER SIZE STAND OFF
SCALE THAT FEATURES ALL
WOOD CONSTRUCTION AND
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RETAIL \$89.95 TOWER \$79.95

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GOLDBERG

the famous Falcon ■

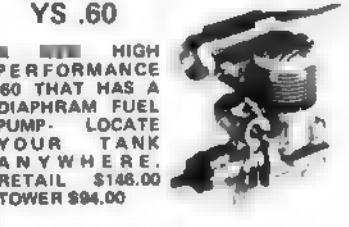
SPAN 56" ENGINE .15 to .35



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■ HIGH
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.60 THAT HAS A
DIAPHRAM FUEL
PUMP. LOCATE
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ANYWHERE.
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OPAQUES: Red, White, Orange,
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Olive Drab
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TRANSPARENTS: Yellow, Red
Orange, Blue (NEW!) Retail \$9.00 \$5.60

ALL NEW FLAT FINISH: Olive
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METALLICS: Plum crazy,
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UNDoubtedly THE FINEST HELICOPTER KIT ■ THE
MARKET TODAY. ROTOR DIAMETER ■ 63" AND
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COMPLETE, INCLUDING ■ H.B. .61 ENGINE. ALL
MECHANICAL PARTS ARE ASSEMBLED. EXCELLENT
WORKMANSHIP THROUGHOUT.



ABOVE: Ken Willard's Fokker Heinschmitt (also in ■■■ issue) and "der Krotstern" (the Toadstar) look ■■■ a Tick bird flying formation with a rhino. BELOW: Toad with in-flight movies in the First Class section. Really, you gotta build one. Don't ■ the guys know till club meeting night...then. . .



Oh, you beautiful... TOAD?

Although a rather ridiculous airplane in some ways, this aerial reptile shows what can be done with a really great inexpensive building material. / by Tewricha Mixchur

Somewhere upon the land, and running loose, there's the Build Now-Design Later Aeroplane Manufacturing Company. This aeronautic throwback came about when a couple of cheap-skates some screwballs and an idea collided head-on.

In real life Alex, Dick, Floyd, Monty, Ron and Wayne all work together. Their habitual 12 Noon to 12:45 PM Hearts Game and Sandwich Exchange led, one day, to the decision to build an aer-o-plane.

Since Big, Lightweight and Cheap were the whole idea, foamboard (i.e., FOMECOR made by Monsanto and available in most art stores) was selected as the basic construction material. After pooling \$21.37, their own radio gear, engines and tools, they rallied to the call—"Build it big, make it quick and be cheap about it, boobie."

So declared, at precisely 12:32 PM July 13, 1973, the Build Now-Design Later crew set out to plan its balsa-less biggie. Ten minutes later...a configuration was locked in and drawn up with no possibility for error—because it was perfect, of course—whereupon, the six Mary Poppins celebrated by going back to work three min. early. Since it was, after all, a closet subsidiary of a wholly unsuspecting and legitimate business,

BNDL limited its hours of operation to the 45-min. lunch break and to — hour after work.

At noon the following day, the aforementioned perfect and completed plan was nailed to the "shop" wall. A wing rib template had been manufactured overnight so work could begin immediately. Following a hearty shout of "OK, you toads, get with it!" a sheet of foamboard was plopped on a conference table, and BNDL's prototoad was underway.

Over the next several days, for the allotted hour and 45 min. per day, there was an elbow-banging flurry. Three of the six being left-handed, the "elbow-banging flurry" was inescapable.

CONSTRUCTION

Hack this balsa-less marvel out of foamboard. The Toad has no complex compound curves and a minimum number of fuselage formers. It's ideal for foamboard, and finishes out super strong, yet light in weight.

So keep it light. The only places you'll require ply are for the wing center section, the doublers at the attach points, for wheel fittings and other detachables.

You'll need a sharp X-acto knife and a long straightedge. You'll also need six

hands and at least two glue guns to keep this slab-sided fuselage straight. Warning! Epoxy is a no-no. Use Titebond or similar glue only.

WINGS: The 6° dihedral in each wing negates the requirement and trouble of ailerons. Ribs, spars, etc., are all cut from foamboard. Spend a little effort constructing the box spars. Keep them straight. And be sure there's a snug slip-fit over the short spars on the center section.

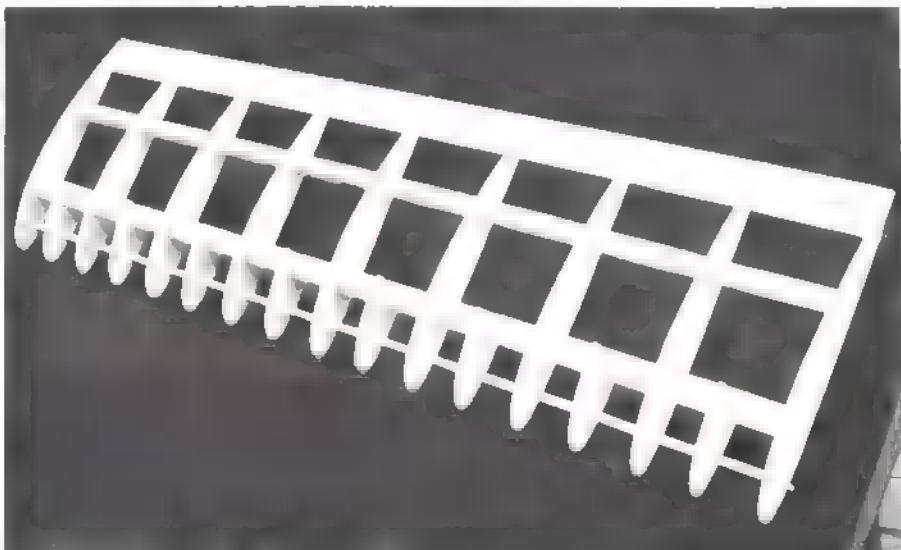
The strut fittings are small—light ply glued directly to the spar. On the center section, only the two outer ribs and the short spars are light ply. The rest is—you guessed it—foamboard.

Cover the leading edge of the wing with old Manila folders. Then cover the whole magilla with something that won't financially bust you—like sticky, heat-shrinkable FasCal. Think of some clever way to attach your favorite engines and mounts to the outer ribs and

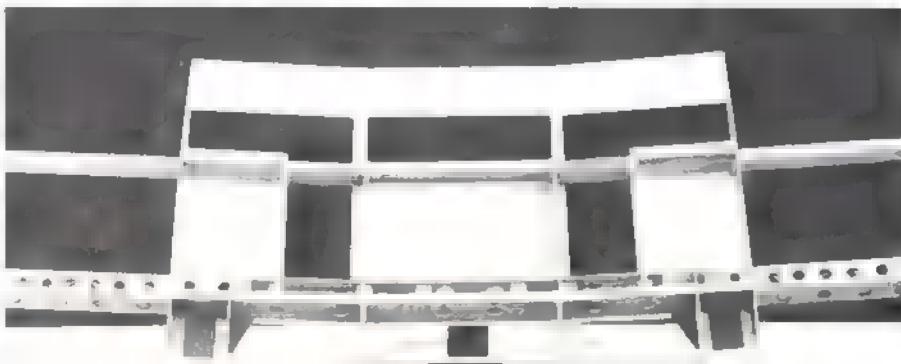
"Build it big, make it quick and be cheap about it, Boobie."



At the fantastic closing speed of not-many-miles per hour, Toadstar lumbers toward the camera. It will lift quite heavy payloads, including a camera, or a dozen eggs.



Wing construction is ■ foamboard including the box spars. Looks like any other balsa wing.



Center section includes lightened load carrying plywood parts and engine mounts. The radio system is housed in the center section too. Cables operate the rear control surfaces. Loads on rudder servo are strong, ■ we'd recommend ■ proportional retract-type ■ with lots of thrust.

ply spars. No need to be analytical about engine offset. Make it zero-zero and forget it.

EMPENNAGE: Same material. Nothing fancy. Normal construction. Well—"normal" only if you'll concede that ■ starboard horizontal stabilizer measuring 26 in. and a port stab that's 27½ in. corresponds with your definition of "normal" construction. And if you do, then welcome to the Build Now—Design Later Aerodynamics Team!

BUT, and oh the wisdom of it all, you're advised to make YOUR vertical fin and rudder removable. One day you too will want to take that toad out to the field, so plan now how you're going to get it there.

LANDING GEAR: Go down to your local crafts shop, and buy four polystyrene foam wreaths about 11 in. in diameter. Titebond two wreaths together and, Voila! Magnificent tire. Glue a round bevelled foamboard plate to the inside of each tire. Then, where the axle goes, glue a 1/4" ply block onto each plate. This will distribute landing loads.

Attempt to find the center for the axle, then drill for 3/16" wire. Taxi tests on the Toadstar revealed that the "attempt" didn't quite hit the mark. (Typical, typical.) Use a simple wire skid at the rear.

PAYOUT: Let your imagination run wild on the payload. For multi-mission purposes, it's up front and detachable. You'll have to assemble ■ long harness to reach the servos that operate the payload. If you want a movie camera payload, put it up front behind ■ piece of plexiglass. Mount the camera depressed 70° from the horizontal.

The Toadstar has an electrically operated, servo-commanded, Kodak Super 8 with ■ normal lens. While it produced spectacular pictures, especially of the landings, a camera with a wide angle lens would reduce the smear effect, especially in the turns.

RADIO GEAR: Standard servos work rudder and elevator. However, if

Dear Sirs.

I just saw your ad in the Sep./Oct. issue of Junior American Modeler & please rush me my free sample right away.

I want to tell you about my friend, a kid who can't do anything right & while back he bought a roll of Super Monokote to cover his Jr. Modeler. I thought he was crazy because I'm a silk and dope man until about a week ago when I saw the results, **FANTASTIC!**

So please send me my ~~first~~ free sample right away.

Yours truly,
Denis Wolowiecki
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WE HAVE EXTENDED OUR FREE OFFER!

We enjoy getting letters from the old silk and dope "pros" like Denis. They tell us a lot about Super Monokote. They also tell us that modelers everywhere are finding out for themselves the advantages of using Super Monokote with its built-in finish.

But we think everyone should know how quick and easy Super Monokote is to apply . . . that it is strong, lightweight, yet puncture-resistant . . . and that with Super Monokote there is no sealing, doping, sanding and polishing ever again. We think everyone, like Denis and his friend, should have the chance to see how FANTASTIC the results can be, too.

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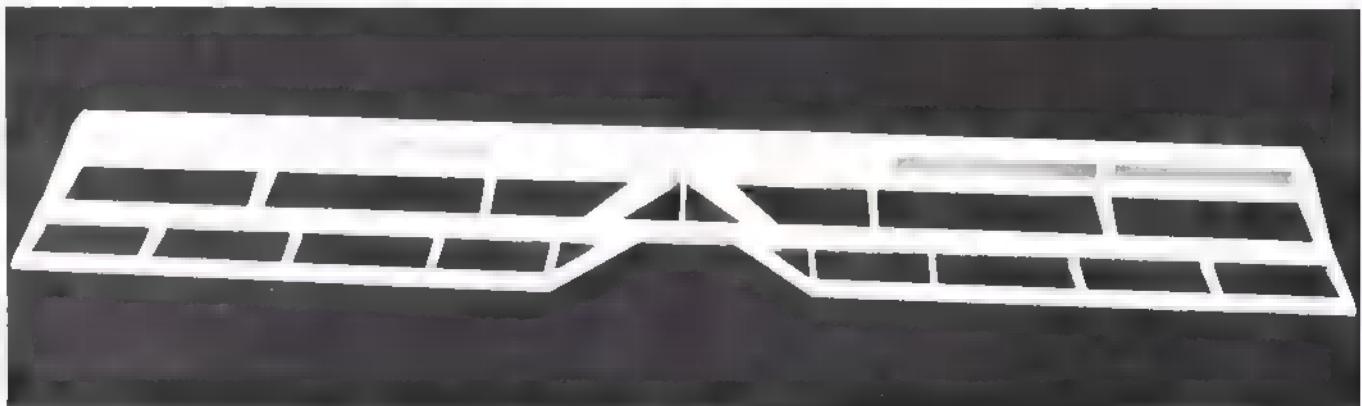
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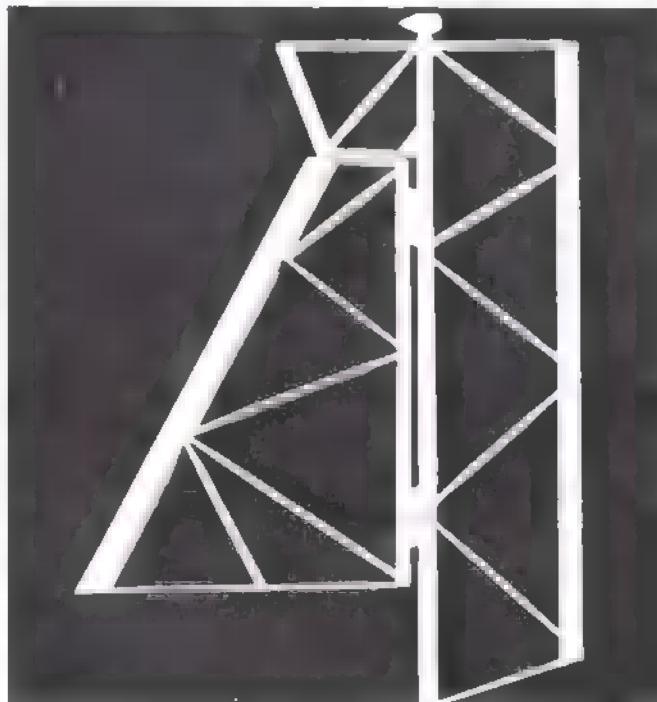
CITY _____

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Again, all foamboard cleverly arranged. MonoKote or other covering material hinges suggested.



One of nice features of foamboard is that it cuts so easily with a sharp knife. It has no grain direction, it consumes vibration, and glued easily. Since it is covered on both sides with a cardboard paper, it is also quite rigid.

yours are old (and you'd prefer real-time control), double up on the servos. Or, use one of the new super servos for the rudder, at least.

BALLAST: To add to, or control that little dab necessary to get the CG right on the main spar, put a small ballast box right up front. Make final adjustments out at the field using the proper size and amount of indigenous pebbles.

On the 24th of July, the components were, at last, assembled. A warm glow filled the room as all stood back to admire the results of their omni-directional handiwork.

Since these occasions are inevitably fraught with historic significance, someone suggested it should have a name. By now, Ethel and Lucy, the office ladypersons, had plenty of suggestions—all unprintable.

"I know," said Ron, who'd only heard about the Wright Brothers when this whole thing started, "Let's call it Canard."

"Ca--nard?" Five lips curled in unison.

"Kline-Fogelman?" he ventured, expending his entire aeronautic vocabulary.

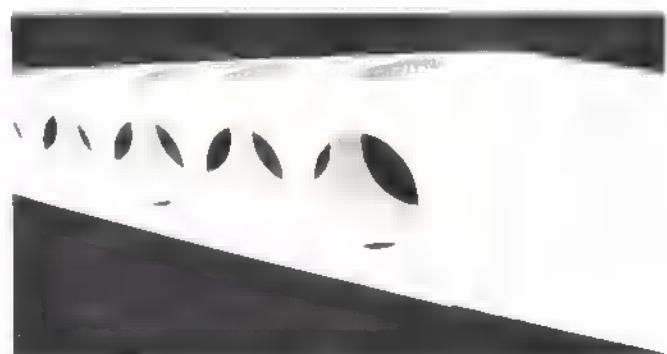
"Nah," Alex drawled. "I think we oughta call it Spot...cuz, well...ya gotta admit that sho' is one-real-dawg!"

"Canard is not a dog," Ron insisted. "Canard is a thing of beauty—"

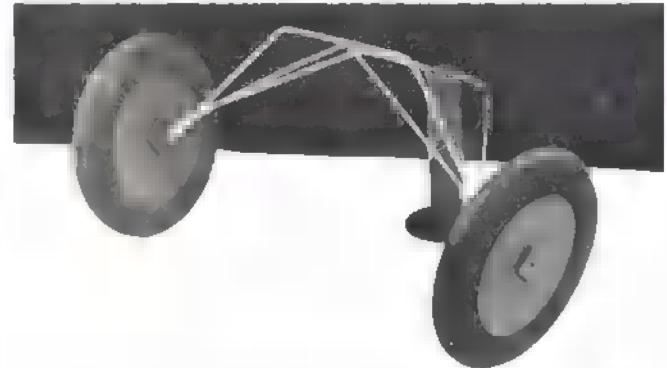
"—and a sight to behold," Dick interjected. "Canard is nothing to call an airplane. That aeroplane is nothing to call an airplane."

"That aeroplane is a toad." Following up this astute observation, Wayne wondered if Jonathan Livingston Toad might not be an appropriate name.

Well, big as it is, it did need a longer name. Just plain ol' Toad wasn't enough. But since aeronautic gymnastics are best left in the more capable wings of seagulls, they settled for "Toadstar." Neither amphibian, nor destined to cut a brilliant hole in the heavens, naming it Toadstar seems to defy all reasoning.



The stuff is light, but with so much area in the fuselage, lightening holes are suggested. When finished, only the holes were covered over.



Are you ready for this? Those foam wheels were sold to the builders as Christmas wreaths for floral use.

However, it makes as much sense as anything else you've read.

Later, during a walk-around of the Toadstar, a voice expressed some concern about its potential airworthiness.

"Oh, that Toad's gonna fly," Monty ordered. "It looks like it'll fly, so it'll fly...course, those two 6ls won't hurt!"

Then Floyd, the company's Chief Test Pilot, carefully inspected the great silver bird while the others searched his face for a hopeful sign. The room was hushed as his sensitive fingers deftly explored its flabby skin. Floyd compared its design and construction against a whole lifetime in aeronautic testwork, all the way from Antoinettes to Ryan STs.

Would he risk his reputation, his good name? Everyone took a collective deep breath as he turned to speak.

"Aarrgh!"
He spoke!

(Continued on page 85)
(Plans on page 66)



Adjustable leadouts are essential for proper trim. Don't leave them out—they are an ounce of prevention.

without landing gear wire hanging out is a blessing.

TIP WEIGHT: Guessing the perfect wing tip weight is impossible even for the pros. To make an adjustable weight for the wing, simply use a $\frac{1}{2}$ " ID tube threaded for a brass pipe plug. Changing the amount of weight with this is a 30-sec. process. It took me about six flights to get the right amount for level flight, both upright and inverted.

LEAD OUTS: Adjustable lead outs are an absolute necessity for top performance under Chicago's changing wind conditions—gale to hurricane. A simple flat sheet metal plate $3/4 \times 4"$, with a slot and sliding lead out guide held with one screw, is an easy way to get adjustable lead outs. Moving it back gives more tension on the lines; moving it forward gives less yaw, but makes the plane light on the lines.

Take several flights on the morning you plan to fly to adjust this perfectly for a particular day. With adjustable tip weight and adjustable lead outs, any weather condition may be surmounted easily.

MOVABLE RUDDER: The rudder works together with the elevator. It gives only slight offset on up elevator. Down elevator causes the rudder to offset more. This helps keep the airplane tight on the lines in all outside maneuvers. It may take a while to adjust this correctly if you are doing it for the first time, but be patient and get it to work exactly as you want it.

ENGINE AND FUEL: In the Chicago area, the only engine to use is a Supertigre. Das Kraut uses an ST 40 with the needle valve through the center of the venturi. The venturi is made of nylon bored to .250 at the needle location, and opened up and down to .375. (Nylon is the best venturi material because it is easily turned, and keeps the entering fuel cool, which cuts down on

nitro evaporation.) A five-oz. homemade uni-flow tank always filled with 5% Go Pop runs beautifully. I use an 11-6 Y&O prop. I am planning to experiment with muffler pressure. This should give a more consistent run. In any case, whatever combination of engine, prop, and fuel you use, stick with it. To vary these will produce different engine runs—which doesn't help the consistency of the pattern.

CONSTRUCTION

Although this is a relatively simple airplane, it is not recommended for your first larger plane construction.

Build the wing of the airplane first. It is jig-built with a standard D-tube. The spars, and leading and trailing edges are $\frac{1}{4}$ " sq. The ribs, planking and cap strips are $3/32"$. Incidentally, the wing was computer drawn by my father, a computer science professor at the Illinois Institute of Technology.

The trailing edge is the reference line to which everything is aligned. First, the ribs are rough cut, sandwiched and sanded using the plan templates. Cut the notches for the spars and the leading edge in the ribs carefully. Then glue the ribs, spars, and leading and trailing edges together. If a jig is being used, everything should line up perfectly. When this is dry, double glue all joints.

Next, install the bellcrank, adjustable lead out guide and the adjustable tip weight tube. Then plank around the leading and trailing edges as shown on the plans. Add the vertical $3/32"$ webbing between the upper and lower planking at the leading and trailing edges. Plank the center section and the wing tips next. Finally, add the cap strips on all ribs. Now the wing is ready for sanding and silking. Complete this before installing the wing in the fuselage.

Next, cut and sand the flaps. They are $\frac{1}{4}$ " at the front and taper to $1/8"$ at the trailing edge. The front of the flap is

also rounded. Cover the flaps with silk and hinge to the wing. Make sure the flaps move freely after installation.

The rudder and elevator are built next. Use $\frac{1}{4}$ " sq. throughout except for the $\frac{1}{4}$ " dowels which run full length at the hinge point. Cut the parts carefully and double glue all joints. When finished, sand all four parts and silk them. Finally, hinge the rudder and the elevator. Make sure they work freely also.

The fuselage is also all $\frac{1}{4}$ " sq. and $\frac{1}{4}$ " sheet. The only plywood pieces are the two $\frac{1}{4} \times 2 \times 4"$ landing gear mounts, and a piece of $1/16"$ plywood for the curved front. A good tip: ■ sure to miter and double glue all joints.

To start, build two fuselage sides. Cut the pieces carefully and build the sides on top of one another with a piece of wax paper between them. Leave off the last piece of $\frac{1}{4}$ " sq. under the stab on both sides of the fuselage. One piece will be glued behind the two fuselage sides when they are glued together. Cut the $\frac{1}{4}$ " sq. pieces for the top and bottom, and the two $\frac{1}{4}$ " sheet bulkheads that go to the front and back of the tank. Glue the fuselage together. Space the motor mounts to fit the engine being used and install. Slip the wing through the fuselage and glue in place the $\frac{1}{4}$ " sheet that fits around the wing.

Glue the wing and the stab in at the same time ■ they can be lined up properly. Make sure they are straight! You can hook up the controls now. To align the controls, run the pushrod from the bellcrank to the elevator, and connect the flap pushrod halfway back on the elevator pushrod.

Before installing the tank, cut the hole in the front bulkhead as shown on the plans. Wedge and glue in the tank. Run ■ piece of $3/32"$ planking from the top of the cutout in the first bulkhead to the bottom of the second bulkhead. From the sides of the cutout to the edges of the second bulkhead, $3/32"$ planking is also glued. The two triangular openings behind the front landing gear mount are also planked with $3/32"$.

Add the block on the top front of the fuselage and the two landing gear mounts. Add the cross bracing. It is $1/8$ ■ $1/4"$ and is half-lapped where it crosses. Add the curved front and cut any holes in the front for the engine. Glue and link up the rudder.

For an added touch, I mounted the pilot on a circle of balsa and connected it to the bellcrank. The pilot turns from side to side when the controls are moved.

Sand the fuselage down and cover it. Add trim as you like. A painted design on the wheels added to the appearance of my airplane.

FLYING

Das Kraut will not turn out heavy (mine weighed 43 oz.), and should fly well without much trimming. Have someone watch the airplane while it is flying to help check for flaws.

It takes a lot of practice to become ■ winner in Stunt. Have someone help you find flaws in the way you fly the pattern. Watch others fly. Find out how to do the pattern correctly. But, most importantly, practice, practice, practice!

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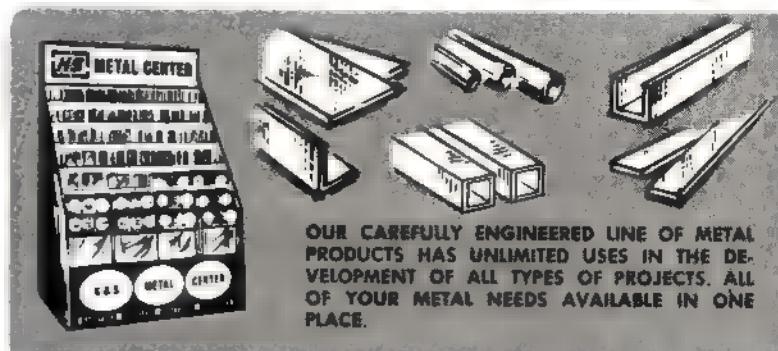
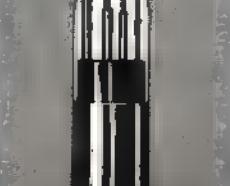
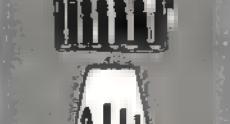
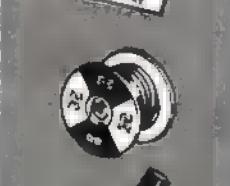
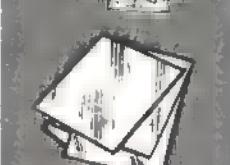
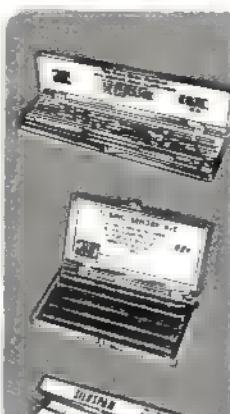
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105	1/4	30
106	9/32	30
107	5/16	35
125	1/16	
126	3/32	
127	1/8	
128	5/32	
129	7/32	
130	1/4	35
131	9/32	40
132	5/16	50
133	11/32	55
134	3/8	60
135	13/32	65
137	7/16	70
138	15/32	75
139	1 1/16	
140	17/32	
141	9/16	
142	19/32	
143	5/8	100
120	1/8	30

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200	.016 x 1/4	15
231	.016 x 1/2	20
232	.016 x 1	25
233	.016 x 3/4	30
234	.016 x 2	65
235	.025 x 1/4	20
236	.025 x 1/2	30
237	.025 x 1	55
238	.025 x 3/4	50
239	.025 x 2	100
240	.032 x 1/4	20
241	.032 x 1/2	35
242	.032 x 1	50
243	.032 x 3/4	50
244	.032 x 2	120
245	.064 x 1/4	50
246	.064 x 1/2	75
247	.064 x 3/4	100
248	.064 x 1	150
149	1/16	25
150	3/32	40
151	1/8	45
152	5/32	50
153	11/32	60
154	17/32	65
155	1 1/16	70
122	9/64 x 5 1/8	35

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252	.015 Brass	.95
253	.022 Brass	1.85
254	.008 Tin	.45
255	.016 Alu.	.40
256	.032 Alu.	.65
257	.064 Alu.	.90
258	.032 Brass	.75
259	.075 Copper	1.85
171	1 1/8 x 1 1/2	30
172	5/32 x 5 3/8	35
173	3 1/8 x 3 1/8	45
181	1/8	40
182	5/32	45
183	3 1/8	55
184	1 1/8	30
185	1/2 x 1/2	06
186	3/8 x 3/8	08
187	1 1/16	15
188	3/32	15
189	1 1/8	30
190	1/2	06
191	3/8	08
192	1 1/16	15
193	3/32	15
194	1 1/8	30
195	047	05
196	055	05
197	067	05
198	080	05

BRASS CHANNEL (12")

STOCK NO.	SIZE	PRICE EACH
181	1/8	40
182	5/32	45
183	3 1/8	55
184	1 1/8	30
185	1/2	06
186	3/8	08
187	1 1/16	15
188	3/32	15
189	1 1/8	30
190	1/2	06
191	3/8	08
192	1 1/16	15
193	3/32	15
194	1 1/8	30
195	047	05
196	055	05
197	067	05
198	080	05

SOLID BRASS ROD (12")

STOCK NO.	SIZE	PRICE EACH
160	1/32	06
161	3/64	08
162	1/16	15
163	5/32	30
164	1 1/8	30
165	1/2	06
166	3/8	08
167	1 1/16	15
168	3/32	15
169	1 1/8	30
170	1/2	06
171	3/8	08
172	1 1/16	15
173	3/32	15
174	1 1/8	30
175	1/2	06
176	3/8	08
177	1 1/16	15
178	3/32	15
179	1 1/8	30
180	1/2	06
181	3/8	08
182	1 1/16	15
183	3/32	15
184	1 1/8	30
185	1/2	06
186	3/8	08
187	1 1/16	15
188	3/32	15
189	1 1/8	30
190	1/2	06
191	3/8	08
192	1 1/16	15
193	3/32	15
194	1 1/8	30
195	1/2	06
196	3/8	08
197	1 1/16	15
198	3/32	15



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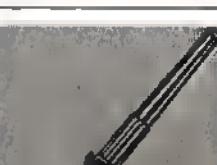
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DURATION

CARL MARONEY ON RC

Roundup: This column space is all too small to cover soaring news and activities adequately. So in an attempt to keep soaring enthusiasts abreast of latest developments, many short items are covered this month.

Harris Hill '73: Undoubtedly the most interesting Soaring event of the year is the Harris Hill Open Sailplane meet which, for the second year in a row, featured experimental ideas. A flight terminated when the pilot flew his ship through an (imaginary) GATE—just like full-size sailplanes do. The meet included a static contest where models were judged for originality, design, finish, structure and design components. In addition to merchandise prizes, top winners were given rides in the big ones. Word is that competition in September '74 will emphasize realistic, scale-like landings to be judged by pilots from Harris Hill.

Toledo Show: Up and coming is the largest modeling convention of the year with over 100 manufacturers' products on display. In addition, there will be hundreds of models on display in static competition. Again in '74, there will be a Sailplane category.

On behalf of the East Coast Soaring Society, I will be manning the ECSS booth along with other members. We are anxious to meet and assist modelers who are in need of RC Sailplane information.

'74 Soaring NATS: Word from AMA Headquarters in Washington, D.C., indicates that the best NATS location will be the abandoned Chennault Air Force Base in Lake Charles, Louisiana. Expect three full days of Soaring, either at the beginning or the end of NATS week. The NATS is tentatively scheduled for August 5-15.

Grand Champion: Leading the pack with a good margin, Otto Heithecker completed the 1973 season with a perfect score to win the ECSS title of '73 Grand Champion. Otto and the runners-up will be honored at the annual awards banquet on July 13, 1974 in York, Pennsylvania. Details will be published in *Sailplane*, the RC soaring enthusiasts' monthly publication. For a free copy of the Journal and information, write: ECSS Secretary, Clive Sadler, 46 Oakcrest Drive, Dover, Dela. 19901.

AerOLYMPICS: RC Soaring is almost certain to get a shot at International competition in conjunction with the 1974 Indoor World Championship tentatively scheduled for July 1-7, 1974 at Lakehurst Naval Air Station. Final decision is pending at the CIAM meeting in Paris, France, on November 29 and 30, 1973.

FAI Soaring Rules: A completely new rewrite is proposed for the provisional rules in both the Thermal Soaring and Slope Soaring categories.

(Continued on page 97)

Dick Pike was among the top ten in Three-Minute Duration at the second annual Harris Hill Open RC Glider Meet. Glider is a Tod by Dodson Designs. (Photo by Ernie Heyworth)



BOB MEUSER ON FF SPORT

Roamer Unlimited Rubber: Roland Anderson's Roamer has won the 50-year-old Muivhill Trophy three times, a distinction shared with only one other model: Frank Heeb's Strato-Lark. Rol won it in 1966 under the old Unlimited Rubber rules with three five-min. maxes plus one Unlimited Duration flight of 11 min. 1 sec. He also won the Midwestern States Championships that year.

Stilett is the Muivhill with an identical model in 1971. In 1973, the Muivhill again returned to Anderson's mantel. The 1973 winner is the well-worn wing and stab from Rol's 1966 model. The later version, intended for short max NATS competition, has been modified to favor durability and ease of repair in exchange for a slight reduction in performance. Fuselage longerons are 3/32 sq. and the cross members are at right angles to the longerons. The frame is covered with 1/32" sheet balsa, followed by tissue. Motor tube length is 36 in. long, and the tailboom is 16 in., making the overall length two in. shorter than the original version.

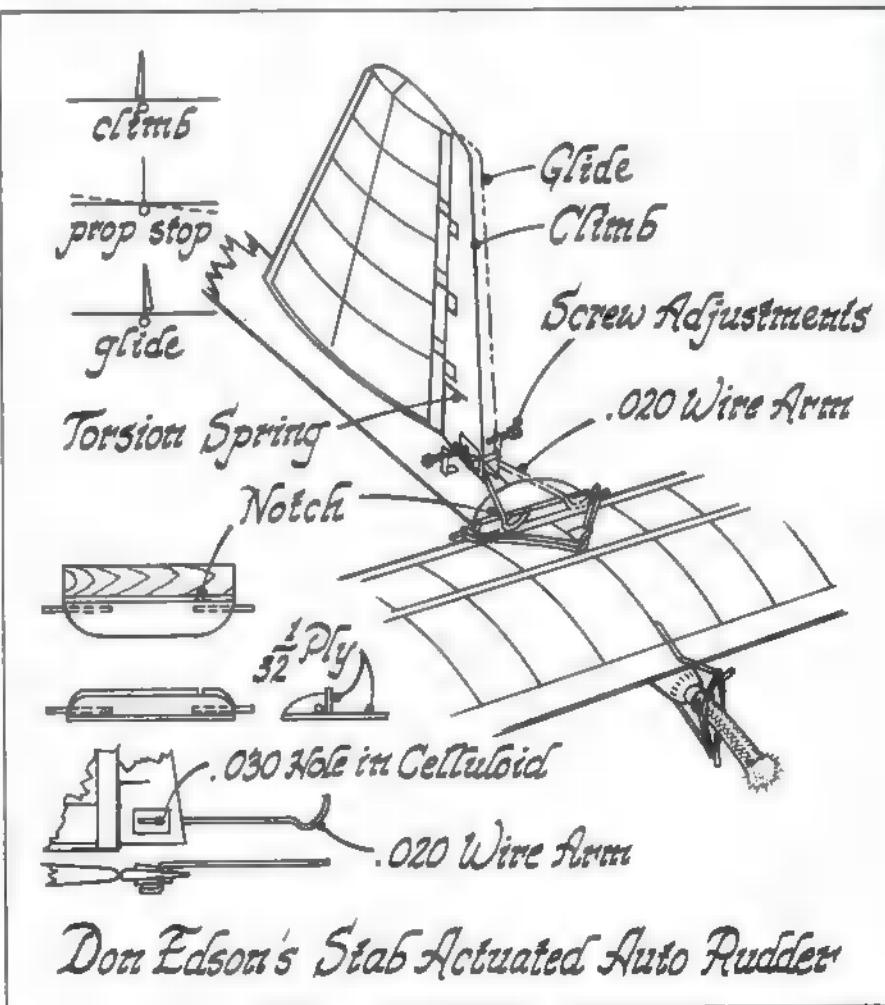
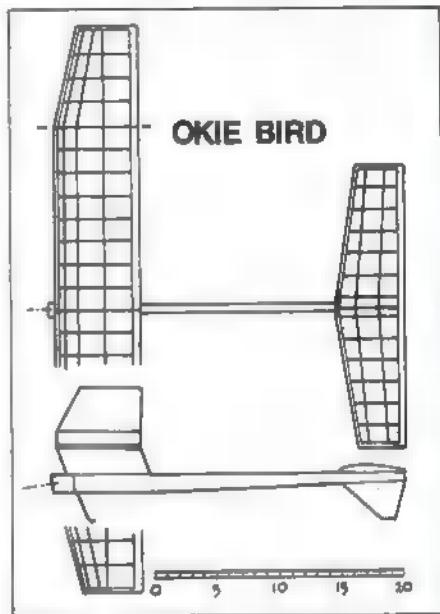
The Roamer's design and construction features are typical of a type that has evolved in the U.S., and is quite different from the more typically British Blimp shown in the January 1973 AAM. However, it has one feature that distinguishes it from most Unlimiteds: a flat bottom airfoil. Rol's rationale was that the low drag airfoil would allow the model to climb higher than a conventional undercambered section. It apparently does this, but the glide is to be as good as that of models with undercambered airfoils. Rol has used the same section as Nordic A/2 towline gliders quite successfully, and uses a thinner version of the same section on his FAI Power models.

Spotters' Manual: Jim Clem's Okie Bird is designed in 1969, tested in competition in 1969 and 1970, and kitted in 1971. The model has since won several major meets, including first place in BOTH Class A Open and 1/2 A Open at the 1973 NATS. Its light wing

loading—276 sq. in. carrying seven oz.—would seem to relegate it to the calm weather category. Its recent NATS successes, however, certainly qualify it as an all weather model. The kit sells for \$5.95 and is available from Clemcraft, P.O. Box 524, Sand Springs, Okla. 74063.

Sal Talbi's Orbiteer appeared in the Spotters' Manual in the July 1973 AAM. He reports that he shipped over 1000 Orbiteer kits last year. The model has done well in the West, taking at least five firsts in major con-

(Continued on page 98)

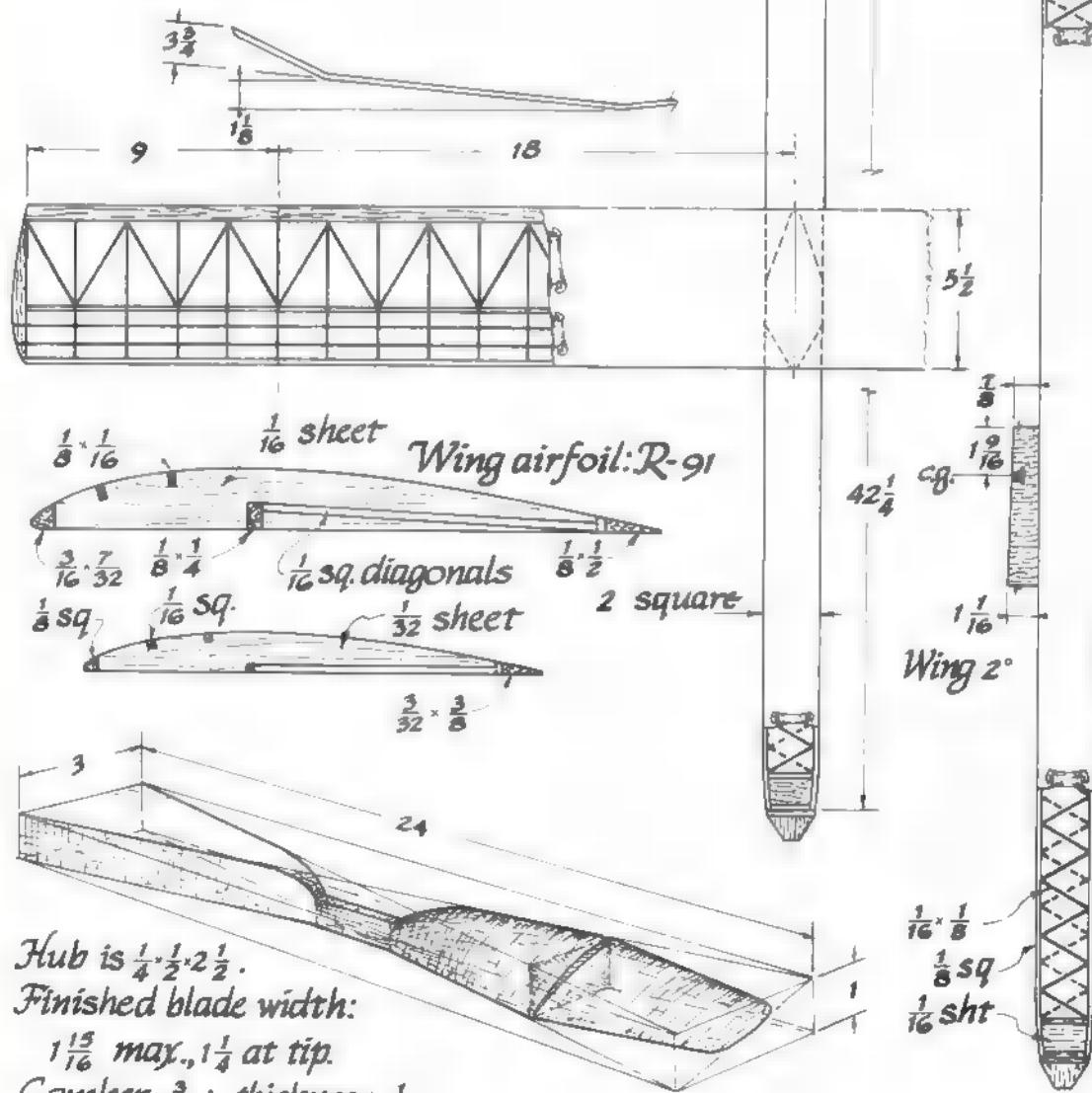




Roland Anderson's
Roamer

Three-time winner of
The Mulvihill Trophy

1st. 1966 Nats.
 1st. 1966 Midwestern States Champs.
 1st. 1971 Nats; R. Sifleet
 1st. 1973 Nats.



Hub is $\frac{1}{4} \cdot \frac{1}{2} \cdot 2 \frac{1}{2}$

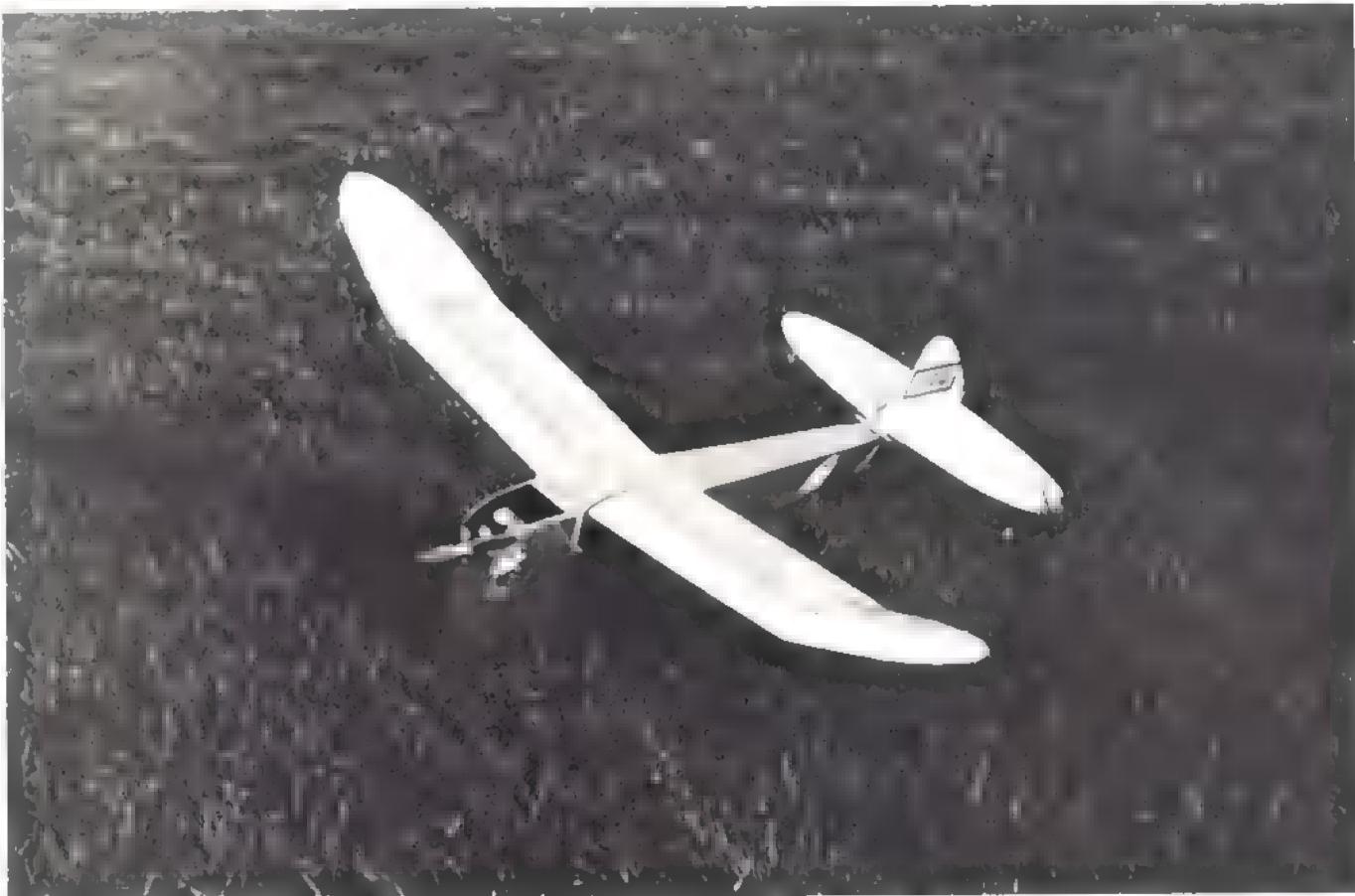
422
Finished blade width:

$1\frac{15}{16}$ max., $1\frac{1}{4}$ at tip.

Camber $\frac{3}{32}$; thickness $\frac{1}{8}$.

WEDGY

So, it isn't WWI, but it is one heck of a free flight model. This revision of a 40s NATS winner has ■ geometric gracefulness all its own. / by Bob Stalick



(Photos by Bob Stalick)



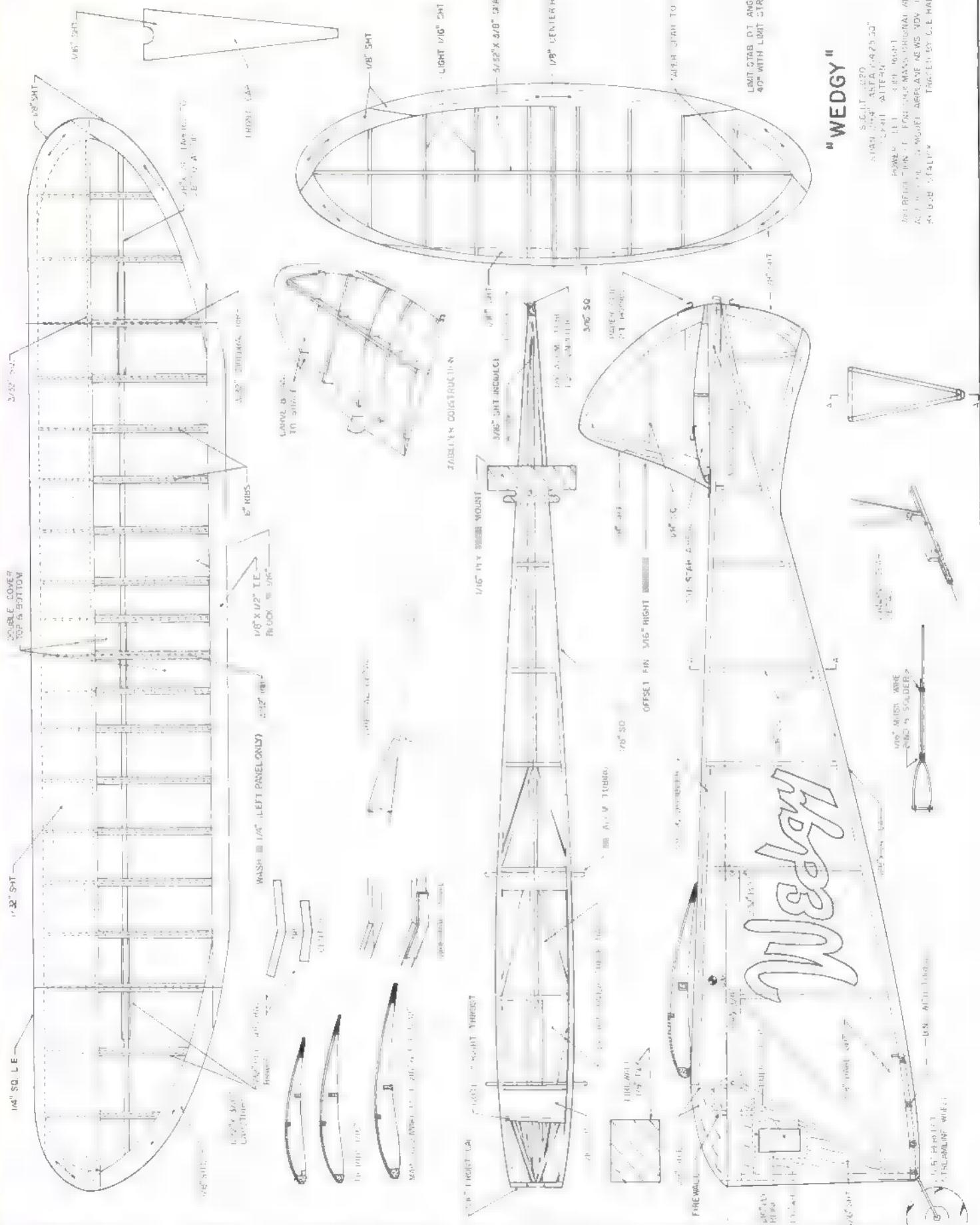
TOP: Wedgy shows the origin of its name. Bunches of side area don't detract from performance a bit. ABOVE: Power is a Cox 020 hidden inside the snout of Wedgy. Fuel shutoff is adjacent to engine to make everything accessible.

When the SCIFs 020 Old Timer Replica event gained popularity recently, I began again to look for a suitable old timer to scale down. It had to be different—noticeably so. It had to make people look twice. It had to fly and, hopefully, it had to be competitive. Then I leafed through some old magazines again, and there it was—Wedgy, The Record Smasher—just waiting for ■.

Out came the paper, ruler, pencils and curves, and shortly, the Wedgy at 7/10 full-size was ready to build. And build it, I did. Less than ten days of part-time building later, it was ready to fly. Out to the field. Start the engine and launch—it flew all right in 20-ft. left circles—just like a ukie on ten-ft. lines. Put in some right thrust; it flew in 30-ft. circles. In went right rudder; it flew in 40-ft. circles. But it began to climb. In went more wing wash-in and the circles opened up and it kept climbing and climbing. A movement of the center of gravity back, and the addition of some up elevator, and the glide improved. Soon, it was trimmed well enough to enter in a contest.

So far, it has competed in three contests and has never placed below fourth

FULL-SIZE PLANS AVAILABLE—SEE PAGE ■



RACING

JOHN SMITH ON CL

More On Final CLCB Vote: Competition Newsletter recently released the final vote on the proposed '74-'75 rules additions/changes. The most important proposal dealt with the existing Builder of Model rule, which roughly states: An entrant must be BOTH builder and pilot. The proposal would have changed the rule as it relates to Open Age Class—to allow an entrant to be builder and member of pit crew, but not necessarily pilot. The proposal was defeated.

However, another proposal relating to $\frac{1}{2}$ A Speed—and allowing use of ready-built models—was introduced and passed. The ready-to-fly models might cause a bit of a problem for all of us. This rule just may discourage more potential speed fliers than it will gain. First, most ARF models weigh eight oz. With the 25G pull test, this puts the pull test over the yield point of .008" lines. The lines will most probably stretch, break, or distort—if the guts aren't pulled out of the model first. And how do you explain to a new Junior flier that, after traveling 100 miles to a meet, he can't use his dacron lines. Sure the rules say single-strand steel, but we still have old competition fliers trying to use equipment that has been outlawed since way back when.

A few people voted YES to allow Proto models to be "whipped up" during the first laps. (This rule proposal would have allowed excess whipping during the launch laps. It didn't pass, thank goodness!).

NATS To Lake Charles, Louisiana: At this writing (late November), Lake Charles, Louisiana, looks like the new, and possibly, permanent NATS site. Louisiana weather should be just right for the speedy types. Runways are over 200 ft. wide, and ramp space is 1000 x 4000', all concrete. AMA should be congratulated for getting the NATS site lined up so early. Previously, final plans weren't made until late spring. This will allow everyone to make his vacation plans early in the year. Now we'll all find out if some of these southern rascals really go fast as they say they do.

Mouse Racing Growing By Leaps And Bounds: The fastest growing events around the $\frac{1}{2}$ A Racing events run by many clubs. I have mentioned these events before but, since early summer, more and more clubs—including these events in their regular contest schedule. The Cleveland Aeromodel Society, P.O. Box 16091, Cleveland, Ohio 44116, has received requests for over 400 plan sets since last February. (150 sets were requested during the Toledo RC Show last spring!) A school in Michigan is going to use these plans for a class project in modeling. In California, WAM is flying up a storm with its own model designs. Even though the CLCB voted on 1"-1" scale, most groups are flying the 3/4" scale stuff. The Cox Black Widow seems to be the "in" engine right now for the reed valve rules.

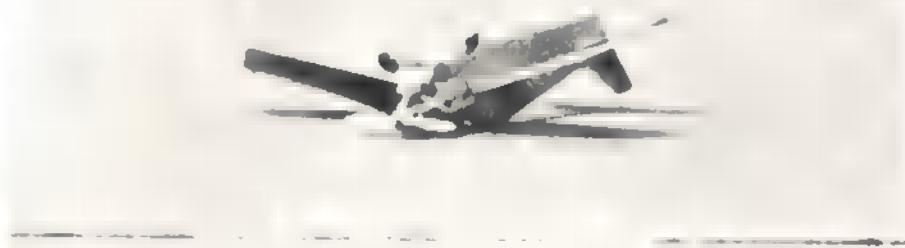
Concern has grown over CL Safety in recent months. Letters from Bill Pardus indicate that number of top speed fliers have asked, "Where do we go from here?" A recent President's Memo in AAM, written by AMA President John Clemens, noted that although model building techniques and materials are safe, we have almost reached the point where physical strength will be the deciding factor in how much faster we can go. Line pull is almost up to (and in some cases over) the 40G pull test—somebody better come with some concrete suggestions pretty darn quick.

AMA has suggested that an "outside testing group" do a survey on CL Speed and Racing safety. If you think present rules sometimes hard to live with, let some outside group get hold of our events and you'll have rules and requirements you never dreamed possible. We should be able to regulate our own events, and the sooner we look at our own current and future problems, the better. Bill Boss and I heard many good suggestions from you at the NATS. Get them on paper and send them to Bill or me. We'll get them all listed. We have the names and addresses of over 200 Speed fliers in the U.S. When, and if, you fliers respond to this very real problem, we will relay all the suggestions that were submitted. Only you, the fliers, can make this thing work. Your help is needed. Let's hear from all of you.



The tangled triangle in Senior Scale Racing at the NATS yielded...

...a truncated wing.

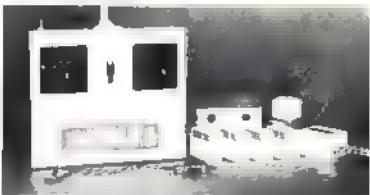


Frank Garzon, Central Islip, New York, is a picture of concentration as he keeps his second place C Speed ship in the groove. Note the fine two-fingered touch on the control knob.



R.C.M.-WORLD 6 FULL KIT \$259.95

Parts listed under assemblies such as Transmitter are not a complete list of parts but rather a list of the parts you may not be able to purchase locally.



R.C.M. WORLD 6

This system appeared in Radio Control Modeler Magazine in a series of articles beginning September 1973. This is no semi-kit but a complete full kit designed for the expert rather than the beginner.

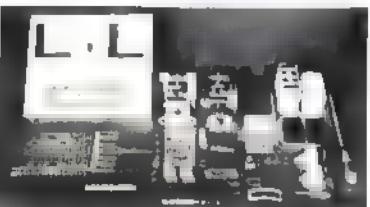
The World 6 was designed with two thoughts in mind.

1. To create an almost perfect transmitter without the interaction found in many systems using an I.C. encoder. Also, without adverse cold weather problems that bother many of these I.C.'s.

2. To employ the popular D & R open gimbal sticks. These look like velvet and we at World Engines are proud of the part we played in working with D & R in the finalizing of this stick design.

WORLD 6 KIT

	Kit	Assembled
System with 4 servos	\$259.95	\$289.95
Servo (each)	22.95	35.00
(4 for)	91.80	140.00
Receiver/Decoder	75.00	95.00
Battery Pack	18.95	18.95
Switch Harness	4.95	6.95
Transmitter	140.00	180.00
Charger (Dual)	11.95	14.95
Transmitter Battery Pack	29.95	29.95
Receiver Board (deck)	45.00	
Decoder Board (No Connectors)	35.00	



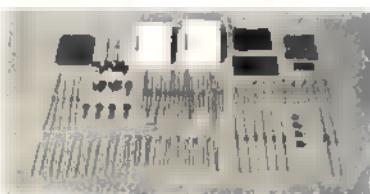
TRANSMITTER KIT.....\$140.00

The World 6 encoder board is pre-drilled. A "road map" showing parts placement has been printed on the component side of the encoder board for easy assembly. The case is punched and folded. The R. F. transmitter board is assembled, tested, and tuned. The D & R sticks are completely assembled except for wiring. This system has a nickle cadmium

9.6V. power source. Transmitter battery pack is in kit form and the flight pack battery comes assembled.

TRANSMITTER PARTS

Battery Pack	\$29.95
Encoder Printed	
Circuit Board	3.98
Printed Circuit Board	2.50
RF Metal Case	1.95
Board & On/Off Switch	3.95
(1) Stick "A" Assembled w/pots, Motor, Rudder, Aux. Channel	27.50
(1) Stick "B" Assembled w/pots, Elevator, Aileron	24.00
Retract Switch	2.00
Meter	6.95
Hardware Kit (Rubber bumper, screws, plastic board mounts)	2.95
Handle Assembly	4.98
Antenna	4.95
Case (Front & Back)	9.95
Female Rye Sound Connector	.90
Voltage Regulator (MFC-4060A)	2.50
10K Trimmer	.65
WE 2924	1.50
AT 2222	1.50
Mylar Capacitor .047	.60
Mylar Capacitor .0047	.60
Mylar Capacitor .15	.60
Trimmer Capacitor Arco 404	1.00
Transmitter Crystal	6.95
Chokes (each)	.65
LL-22	.75
LL-20	.75



RECEIVER/DECODER KIT.....\$75.00

The receiver/decoder is basically the same as our reliable and well-proven MK IV System. This receiver/decoder is an outstanding and straightforward design. It is a double tuned superhet receiver. The decoder utilizes a low drain TTL single chip integrated circuit.

RECEIVER & DECODER

Receiver Board	\$2.75
Decoder Board	2.25
OS Connector Set (1 M/F)	2.75
OS Male Connector	1.00
Female Connector	2.00
Receiver Crystal	6.95
1 IF Can	1.50
5139 Transistor	1.50
TIS 97	1.50
Antenna Coil	1.95
Mixer Coil	1.95
SN74L164N	5.50
Receiver Case w/screws	2.50
1/4 watt Resistors (each)	.13
Tantalum Capacitors (each)	1.50
Disc Capacitors (each)	.35
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Chokes (each)	.65

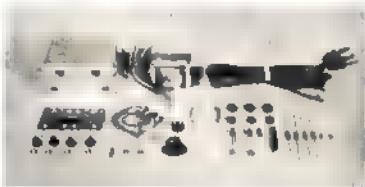


S-9 SERVO KIT.....\$22.95

The S-9 Servo is the smallest and fastest servo that World Engines has to offer. This servo is extremely tight with excellent resolution. We employ our WE 3141 I.C. in this servo which is why we are able to keep the size down. The S-9 Servo has a low battery drain which gives you more flying time per charge.

S-9 SERVO

Motor	\$7.25
Mechanics	4.95
Printed Circuit Board	1.50
IC WE3141	5.95
5K Pot Element	1.50
Eyelet & Grommet Kit	.75

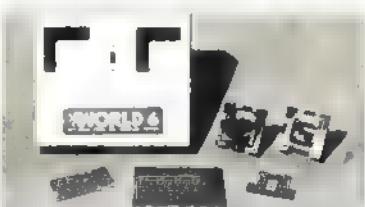


WORLD CHARGER KIT.....\$11.95

The World 6 Dual Charger may be wired for 110 volt or 220 volt. This charger utilizes L.E.D.s (light emitting diodes) as charging indicators. With this charger you may recharge transmitter batteries and flight pack batteries separately or at the same time.

WORLD CHARGER

Transformer	\$4.50
Case	1.50
L.E.D. (each)	1.50
Male Rye Sound Connector	.75
Printed Circuit Board	2.50
Line Cord	.50



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getting started in R/C

SIXTY-SEVENTH ■ A SERIES LAWS, RULES, REGULATIONS AND THE NEW MODELER

■ McNERNEY

The sins of most new modelers are those of omission, rather than commission. It stands to reason, in this overcrowded world, that ■ hobby such ■ RC is controlled to some extent by rules. Some ■ imposed by the government. Others are prescribed by the Academy of Model Aeronautics (AMA), and still others are put forth by local clubs. Despite what you may think, most of these rules are designed to permit you to "do your thing" with a reasonable degree of safety to yourself and others with minimum interference or annoyance to other hobbyists and non-hobbyists. We'll try to take some of the more general rules and explain their purpose so that ■ RCers may more readily accept them.

In order to control our models, we must transmit radio signals. Except for very limited range units (outputs of less than 100 mw), a license is required by the Federal Communications Commission (FCC). Specific frequencies are allotted for the control of models, some of these solely for model aircraft. Voice transmission is not permitted on these frequencies in the Citizen's radio service. A modeler's attempts to use a voice frequency are illegal; in addition, he may interfere with legal voice transmission. He also stands a very good chance of being "shot down" by someone legally transmitting ■ voice message.

Even after you are properly licensed, there are other legal requirements. Transmitter output power is regulated, ■ well as accurate maintenance of the transmitted frequency. It is illegal to tamper with the tuning adjustments on a transmitter without a special FCC license. You can, however, adjust the tuning of ■ receiver, but don't do it unless you know how and you have the proper test equipment.

Ask your dealer, when you purchase a radio, for the forms and procedures for obtaining an FCC license. If he can't help you (and he should), check with the local FCC office or with the FCC in Washington, D.C. If you join an RC club, the club may have a license. If so, find out how you can use the club license. *Don't operate your radio until you are properly covered by a license!* You are also required to maintain an up-to-date copy of Part 95 of the FCC regulations. These are available for \$2 from the Government Printing Office in Washington, D.C.

The greatest danger to modelers, by and large, is other modelers. Frequency control is always maintained at club flying sites. Never operate your radio gear within five miles of a known flying

site. Your equipment transmits at ■ line-of-sight distance of several miles. It may not be noticed by another modeler while his plane is on the ground, but, once airborne, the receiver may "see" your signal better than the owner's.

The Federal Aviation Agency (FAA) has recently issued a list of good operating practices for modelers. They are now only guidelines, but could become enforceable regulations. They are designed to minimize the danger of air space interference between model aircraft and full-size aircraft, and provide for generally safe operation of model aircraft.

The AMA requires its members to abide by its Official Safety Code in order to be covered by AMA liability insurance. These rules are published each year by AMA and are sent to each member. The three-part Safety Code for RC, as printed by AMA, reads:

(1) I will have completed a successful radio control equipment ground range check before the first flight of a new or repaired model.

(2) I will not fly my model aircraft in the presence of spectators until I become a qualified flier, unless assisted by an experienced helper.

(3) I will perform my initial turn after takeoff away from the pit, spectators and parking areas, and I will not thereafter perform maneuvers, flights of any sort, or landing approaches over a pit, spectators, or parking area.

These three rules are simple enough to observe, and are the final determinants of your insurance.

Becoming more prevalent in clubs around the country is the rule that requires powered models to be "effectively muffled." This rule varies in scope and application from one locale to another. Unfortunately no one has defined in measurable quantities what "effectively muffled" means. Some very expensive mufflers provide little muffling. The basic idea, however, is sound (no pun intended.)

With the energy crisis becoming more acute, we must seek flying sites closer to home. This means that, unless we can operate with minimum annoyance to others, we may not be able to find or keep flying sites. Also, particularly as ■ novice, you will find it most disconcerting to try to concentrate on controlling your plane with an unmuffled 60 running wide open about 10 ft. behind you.

What it all boils down to is consideration for other people. We joined the hobby to relax and enjoy ourselves. If ■ follow a few simple rules, we'll all be sure to continue to enjoy RC.

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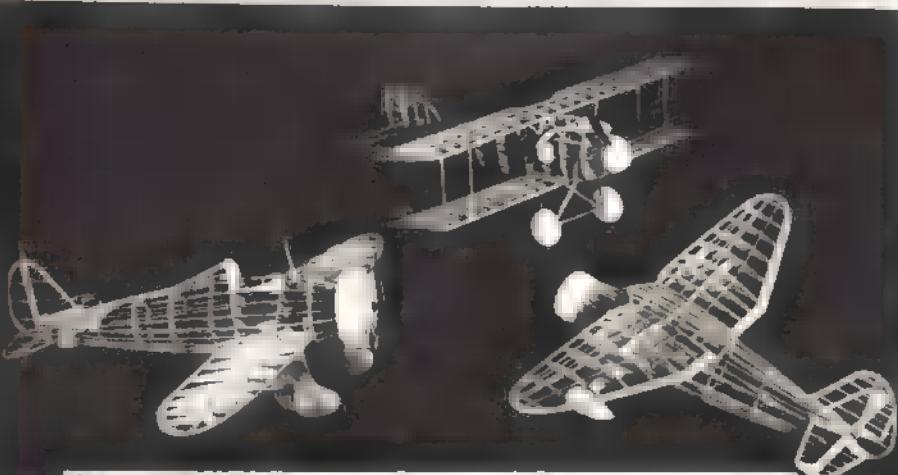


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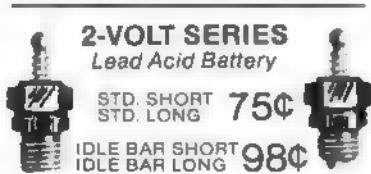


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SUNDAY FIGHTERS

(Continued from page 22)

sides and bottom between the longerons for strength. Noseovers are common with all WWI fighter type models because of the high landing gear.

Note the downthrust and sidethrust which is built into the firewall. The amount shown is ■ good average, but you may find it varies slightly with individual models. That's always true.

The nose block is shaped and hollowed to fit your engine. Although it can be permanently glued in place, I preferred to make mine removable for ready access to the engine and to ease the cleaning of the compartment. To keep it ■ in flight, a couple of small screws can be inserted in the two sides, and a rubber band stretched between the screws and in front of the nose-block. Align the block simply by pinning it in place with a couple of T-pins — or if you prefer, use a couple of short $1/8$ " dowels which fit into aligning holes.

Engine mounting is also a matter of choice. I used a Tatone mount that I've had around for years; that makes it easy to vary the thrust line as needed. In my prototype, I installed the firewall with no downthrust or side thrust, . and through flight tests added the necessary number of washers behind the Tatone mount to get what was needed. It turned out to be approximately as shown on the plans; so rather than make

you go through all that, the down and right thrust is built-in.

The cabane structure is simple, but you must be careful to assure that it is properly aligned. You must not only have the right incidence, but it must be the same on both sides. Best way I know to do that is to epoxy the vertical members in place; then lay the fuselage on its side over the plans and carefully epoxy the right-hand wing cradle to the uprights, making sure it is lined up. Then epoxy the left-hand cradle in place to match. Double check the alignment by measuring the distances from the top longeron to be sure they are uniform.

The plans show short lengths of paperclip wire epoxied to the wing cradles to retain the wing rubbers. Here again, if you prefer, cut the wing cradle out of the $3/32$ " plywood with a little knob on it, rather than adding the wire. Frankly, I didn't think of that until after I had mine assembled.

Although it is not necessary, I did add strips of $1/4$ ■ $1/16$ " wing seating tape to the top of the wing cradle and to the bottom of the fuselage where the lower wing fits. Helps to keep the wood from cutting into the foam wings when the rubber bands are tight.

Back at the tail, note that a piece of $1/16$ " plywood is glued to the bottom, to provide a stronger surface for the tail-skid mounting. Be fairly generous with the epoxy when attaching the skid—it gets ■ pretty rough side loads at times.

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LANDING GEAR: This is the usual wire bending job, a little tedious but not too hard. Wheel alignment is easy since an axle is used. The "sub-wing" spreader bar between the wheels is shaped from 1/8" balsa sheet and epoxied right to the axle. No need to imbed the axle—you can't notice it from five ft. When attaching the landing gear, use individual rubber bands at each attachment point where the 3/16" dowel protrudes. This reduces the stresses which are imposed during ground loops and hard landings. The MonoKote "fairing" is just trim strip, cut and folded over the wire and then stuck to itself. Looks OK from five ft., and isn't always breaking off. Good example of KISS—Keep It Simple, Stupid.

Wheels are Williams Brothers 2 1/2-in. WWI scale type.

INTERPLANE STRUTS: Here are some other examples of KISS. Make struts from coffee stir sticks cut to length and epoxied together. The length will depend on whether you build the German or Altied version, since the former slant inwards slightly. Placement is not critical; in fact, you don't need them at all but they do add to the appearance. Locate them about five in. from the tip of the top wing of the Fokker Heinschmitt and four in. from the tip of the lower wing. On the Bristol Spadport, above five in. on both wings is OK. It isn't critical.

To hold them in place, the T-pins are first stuck into the lower wing; then the

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Articles: Description—one paragraph; outline—one page typed. No theory. Stuff to help beginners, sport fliers. Reports on significant projects that help original designers, experimenters. Logical, proven configurations, or overlooked types of valid aircraft.

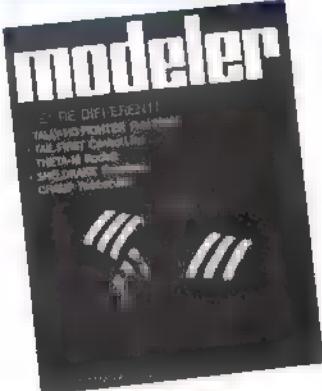
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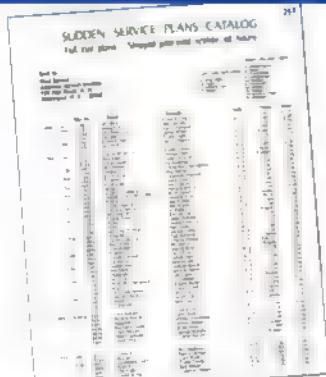
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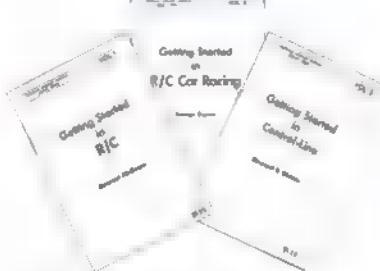
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upper wing is lowered into place on the cabane cradle and the pins stuck into the lower surface of the top wing. I did find that, when doing violent maneuvers, it was necessary to stretch a small rubber band around the wings at the strut line, otherwise the flexing of the wings would permit the pins to become dislodged. But you can't see it in flight.

EQUIPMENT INSTALLATION: Shown is a simple method of installing small servos using servo tape. It works well, but if you are one of the modelers who doesn't care for servo mounting tape, it's easy to add a couple of cross braces for servo mounts. I happen to like mounting tape. There's enough room for almost any of the current small size servos.

FLYING: The Sunday Fighters are really nothing more than sport free flight models with radio control added. Properly trimmed, they could be flown free flight using a good hot O49. With three-control radio, however, they are about as much fun as you'll find.

A word of caution. I cannot honestly say that they are good models for beginners to fly, even if they are excellent for beginners to build. They are very responsive to the controls and because they are small, the response is relatively quick. But any sport flier who has flown an Ugly Stik or any of the other simple trainers will have no trouble with the Sunday Fighters. Arrange the control linkages so that you get about 20° of throw in either direction—maybe 15 if you think you are a little slow on the uptake, and get used to the response. Then, if you want, you can increase the throw to 25 or even 30°, and watch out! You'll put on the wildest show in your life. Get a fellow modeler to build one version, you build the other, and go up for some Sunday fighting!

Achtung! Come fight mit me! In my Fokker Heinschmitt!

I say, old chap, let's have a go! In my Bristol Spadport!

BIPES 'N TRIPES

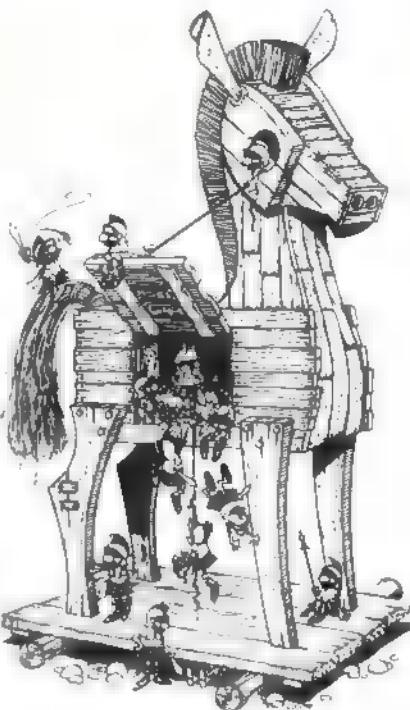
(Continued from page 34)

for the fuselages; a small sheet of 1/8" plywood for motor mount backing and control horn mounts; 1/8" hardwood dowels for wing struts and tail skids; 1/16" wire for elevator connectors, pushrods and landing gear; a sheet of 1/16" aluminum stock for motor mounts; and 1/8" sq. sticks for wing and tail strengtheners.

Here is what you will need to build all four airplanes: Six 1/8 x 4 x 36" balsa sheets; one 3/8 x 4 x 36" balsa sheet; one 1/8 x 6 x 12" plywood sheet; two 1/8 x 1/8 x 36" balsa sticks; four 1/8" round x 36" dowel stock; three 1/16 x 36" music wires; one 1/16 x 6 x 12" aluminum stock (See K&S display at the hobby shop.); four $\frac{1}{2}$ A bellcranks; four $\frac{1}{2}$ A control horns; four sets 1 $\frac{1}{2}$ " Williams WWI wheels.

Here are a few pointers for mounting and aligning the wings.

BIPES: Glue the bottom wing on



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first and let it dry. Pre-cut all struts and glue only the fuselage struts in place at the locations shown on the plans. Let them dry. With the fuselage and bottom wings flat on a board, place top wing on center struts (strut holes should be drilled all the way through the wings); prop up top wing tips to level the wing and make sure the leading edge is parallel to the bottom wing leading edge. Glue the center struts to the top wing. When completely dry, add end struts and 1/8" balsa braces.

TRIPES: Glue center wing in fuselage first. When dry, glue bottom wing and align with center wing. Add balsa struts and center fuselage dowels and let dry. Add top wing and 1/8" balsa braces last.

The heavy aluminum motor mounts ■ be cut with tin snips or ■ razor saw. If you have ■ old aluminum lawn chair, the arms ■ pre-bent and need only hack sawing into proper widths. Screw the motor mounts to the fuselage before attaching the engine. The engine is held to the aluminum mount with 2-56 nuts and bolts. Before mounting motor, some alteration is necessary. Remove the four screws from the back of the tank; then turn the front part, with the cylinder pointed to the right side (needle valve, still upright), and reinstall the screws.

The landing gear is wedged between the engine and the aluminum mount. This gear is a good safety indicator because if the gear falls out, you know your engine is loose.

The roundels and iron crosses can usually be found in decal sheets at the hobby shop. Basic colors ■ indicated under the names on the plans. Remember, lots of super pilots in WWI had their own special paint designs, so feel free to use your imagination.

Please write to AAM if BIPES and TRIPES are popular in your area. Pictures, types of events in which you use them and other data would be appreciated because... MONSTERS and MONOPLANES are now flying their test program. Your interest in this type of 1/2A fun will get that published, too!

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WEDGY

(Continued from page 70)



Now, Bob, smile when you see a — Author holds his 1940 design replica. In those days, the model had a four-ft. wingspan and was powered by a Bantam engine.

place. It has never placed above third, however, but I'm working on improving that. If my model is any indication, it's probably not going to beat too many of the scaled down Rangers or Zippers, but heads do turn when it is carried out to the takeoff boards, and the camera jockeys come out of the weeds to burn up film. No one ever asks, "Is that a Ranger?" I like this model because it's different. On top of it all, it's easy to build.

CONSTRUCTION

THE WING: Cut out all ribs according to the patterns. The airfoil is scaled down exactly from the original. Laminate the tip pieces and tip trailing edge from 1/8" sheet using epoxy. Sand to a trailing edge shape. Pin into place the leading edge and the trailing edge, blocking up the front of the trailing edge 1/16". Epoxy ribs into place. Glue in the 3/32" top spar. Make sure that the left main panel is washed in 1/4" (leading edge up 1/4") at the polyhedral break. Glue all four panels together, add bottom spar, 1/32" top sheeting, and 1/8 x 1/32" cap strips to top of each wing rib. Sand to shape. Give entire wing two coats of clear dope and sand lightly. Cover with Jap tissue—double cover the center section.

THE STAB: Cut all outline parts from 1/8" sheet. Epoxy together over plan. Cut spar to shape. Epoxy in place. Cut rib blanks to length from 1/16" sheet and cement into place. When dry, sand to shape.

THE FIN: Cut both top and bottom fin parts to shape from 1/8" sheet and epoxy parts together over plan. When dry, sand to a symmetrical shape. Now, cover stab with tissue, epoxy top fin in place on stab and cover it with tissue.

FUSELAGE: Use epoxy cement on all fuselage parts. Build one fuselage side over the plan, unpin and leave on plan, then place a piece of cellophane wrap over the completed side and build another side directly on top of it. Cut the V-shaped fuselage front from 3/16"

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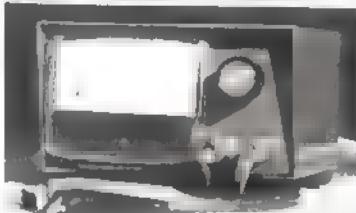
A3

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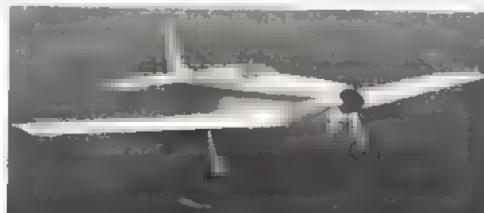
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sheet. Cut the firewall to shape. Using a Cox 020, drill holes in the firewall so that the engine is in the center of the firewall and as close to the top as it can be mounted. Epoxy in all blind mounting nuts. Cut all cross pieces to size.

Now comes the only critical part of construction. Pin the fuselage sides upside down on the fuselage top view on the plan. Follow the lines closely to be certain the sides are lined up. Epoxy the bottom of the fuselage sides together. While the model is still pinned down, epoxy in all $1/8"$ cross pieces and the V-shaped fuselage front. Unpin the fuselage from the plan and epoxy the firewall in place. (Note that it has three degrees right thrust). Fill in behind and below the firewall with $1/16"$ sheet to isolate the engine compartment from the rest of the model. Epoxy in the $1/8"$ sheet landing gear brace and the wire landing gear—complete with wheel. Bind this assembly to the fuselage with thread and epoxy. Glue on the $1/8 \pm 1/4"$ bottom cap strip and the sub-rudder. Glue in the $3/16"$ stabilizer incidence block and the $1/16"$ ply stab mount. Sand the entire model. Dope twice and cover with tissue. After covering, epoxy in the $1/8"$ dia. aluminum wing hold down tubes and all dt equipment (snuffer tube, hooks, etc.). Also cut out a $1/16"$ plywood timer mounting platform and install in fuselage—see plan for position. Dope model and trim to suit. Key the wing and stab with split $3/16"$ dowels. The stab should be set so that there is approximately $3/16"$ right rudder.

FLYING

Start the engine and set the timer for a short engine run of three or four sec. Launch gently into the wind. The model should make a definite left turn and begin climbing. If it doesn't climb but circles to the left, try each of the following:

(1) Add a washer behind the engine mount to give more right thrust; or (2) add a bit more right rudder tab; or (3) add a thin $1/16 \times 1/2$ " piece of trailing edge stock about two in. long on the underside of the wing trailing edge on the left main panel to give more wash-in.

A combination of any or all of these trim methods will result in a fast, left corkscrew climb of about three turns in 15 sec. ROG takeoffs are a cinch—the model practically leaps off the boards. Glide trim is controlled by stab incidence and stab tilt. The model glides to the right. Also, check the Center of Gravity to see that it is as stated on the plan.

After you have flown the model,



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you will know the feeling I have about it. It's attractive in its own homely way. Its landing, — it bounces along on its single wheel, is an unusual and satisfying sight. In short, it's a model that is what most of us are looking for—out of the rut. Build a Wedgy and go out and enjoy flying again.

RHINEBECK

(Continued from page 32)

public address system with sound effects of machine guns and bombs dropping. Winner of the Combat event was Frank Knowles of Endicott, New York flying a V/K Nieuport and a Pro-Line Radio.

The Scale event was a real pleasure to watch as the planes looked like the real thing flying around the New York skies. There were all types of planes entered in the Scale event, and all sizes, single and multi-engine. Winner of the event, Norm Evans of Valley Forge, Pennsylvania, flew a deHavilland DH2 Pusher aircraft powered by an Enya 60 and controlled with a Kraft Radio.

John Goodrich of Burlington, Vermont, had one of the close calls of the day flying his 125-in. span Hanley Page Bomber powered by two OS 60 Gold Head engines, Kraft radio. The takeoff was beautiful and a sight to see. After flying for a few minutes in the Scale event, one of the engines sagged a bit and stopped running. A masterful piece of piloting brought the bomber back to

the ground in good shape with only a bent LG. For a moment the crowd thought the Hanley Page was not going to be around too long, but the LG was repaired and it flew the next day.

Handsome trophies awarded to the contestants were made of polished wood with a plaque. Authentic WWI instruments were mounted on each of the first place trophies. Trophies and merchandise were awarded to winners down to eighth place in each event.

Flying started at 8 a.m. and continued till 5 p.m. on Saturday. After the flying on Saturday night, a cocktail hour was held, followed by a barbecue beef dinner at the local VFW Hall. Highlight of the evening had to be the showing of a movie made at the Rhinebeck Aerodrome last year by Eastman Kodak. The movie was great in every sense of the word. The film, "We Build 'em, We Wreck 'em, We Fix 'em," has many fine shots of the full-scale at the Aerodrome as well as the models. It also shows how a model is put together and how the controls work. If your club is interested in viewing the movie, write to the Audio Visual Aids Dept., Eastman Kodak, Rochester, N.Y. (I recommend that your club send for this movie as it is one of the finest to date.)

The Cole Palen achievement award, donated by the Radio Control Association of Greater New York, is an annual award. This year it went to Vern Kriebel of V/K Models.

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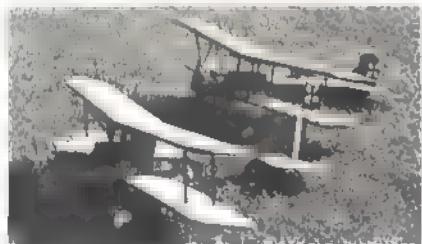
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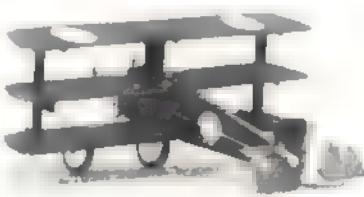
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0825/S.S.P. RC HELICOPTER—Gene Rock's very successful large trainer helicopter needs only 40 to 45 size engine. Designed for home builder with minimum machined parts, gyro-stabilized tail rotor, all belt drive, 4-channel radios. \$6.00. Also recommended is Plan No. 0826 with full-size drawings for all special machined parts. \$2.00.

0824/RYAN SC—Unusual 049 free flight scale model is low wing with excellent flight stability. Flies fast and handles wind easily. \$2.75.

tures the Black Barron, Villian (played by Cole) and Sir Percy Goodfellow, who in real life is Dick King, the owner and pilot of the Sopwith Pup used in the show. The flying is really something to see when you compare the speed of the WWI ships of yesterday to our modern airplanes.

If you haven't been to Rhinebeck, think about going next year. And take a model along! You couldn't spend your weekend at a finer place than at the Rhinebeck Aerodrome.

List of Winners

SCALE

1. Norm Evans	1. Frank Knowles
2. Berry Smith	2. J. Swift
3. Ralph Jackson	3. G. Rose
4. Alan Spevak	4. B. Wisher

MISSION

1. W. Wardlow	1. Knowles/Dietric
2. D. Donahue	2. Senyk/Hoffman
3. N. Ziroli	3. Silver/Denny
4. J. Bonaduce	4. Wisher/Allen

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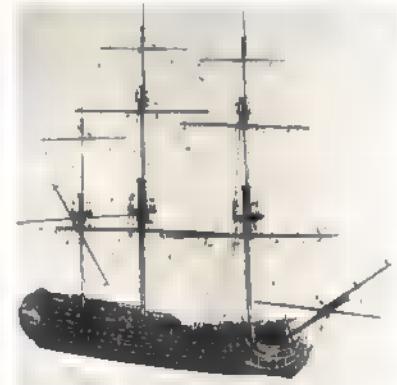


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Simple control line astirro—designed by Ch Dan Nelson. Rotor diameter 24'; length 37'; takes .48 size engine with motor control.

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Lockheed Lightning P-38. Semi-scale stunt control-line model by Lew McFarland, was twin .19s with throttle control for shooting landings.

Thor Tiger. Famous home-built aircraft in radio control model form by Joe Krieger. Takes a .33 engine.

Group Plan #953C 1 cu. 45¢

Focke-Wulf FW 190 German World War II control line flying scale fighter model by Walter Musciano. 3/4" to 1" scale; takes engine from .14 to .29 cu. in.

A/2 Viking Nordic Towline Glider by British Champ Bill Ferrance. These are HALF-SIZE plans with full size ribs and cross sections.

Group Plan #164 6 cu. \$1.10

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By 11:30 AM, a sense of readiness prevails, and the other fliers all bring their crafts to rest. Instinctively, the children retreat to the safety of their mothers' nearness. The scene is charged with expectation.

"Ready, Floyd?"

"Ready."

Two mighty HP 61s with 14/4 props fire up in muffled power. The Toadstar taxies smoothly to the far end of the field and turns to face a soft breeze. Then slowly, deliberately Floyd — the throttle forward. The Toadstar obeys.

Roll, roll, roll. Tail up, roll. LIFT OFF. (Surprised? Twenty lb. dry weight should unduly strain almost 3200 sq. in. of Clark Y?)

Higher into the ether ascends the silver Toad. Left turn, straight and level, then left, up, down, left (again?), climb and circle left (40 lashes to the Rigger!), its engines throbbing in sweet harmony. Twice around the field, then a long glide path to gentle touch down.

The BNDL crew is jumping up and down. The crowd goes wild, "Encore! Encore!"

Amid the din and applause, the crew huddles. "Shall we, Floyd?"

"We gotta. I forgot to turn on the camera."

During lunch break, a little jiggling with the rigging brought everything into plumb. Then, — at the ready, brains in gear, 61s in sync, the Toadstar makes an even shorter takeoff roll, and is once again airborne. Making left turns

and right turns, climbing for altitude, circling majestically, the Toadstar—its camera snug within—records the gently rolling countryside below. All is neato keeno from lift off to shut down.

Just 37 days from concept to first flight. The Thing is all that its designer/builders hoped it would be. Big. Light-weight. Cheap. And it flies. (Howard, you shudda been there.)

ELECTROMOTIVE POWER

(Continued from page 57)

to the automotive industry's electric windows, windshield washer pumps, consumer electric appliances such as rotisseries, camper water pumps, hair dryers, etc. And of all the motor driven toys made in the world, Mabuchi's DC motors are installed in 75 percent of them.

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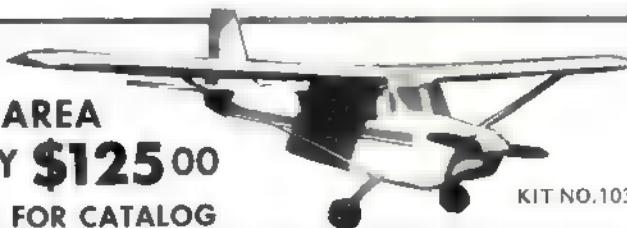
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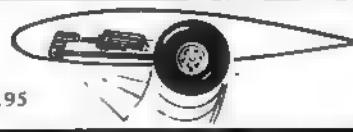
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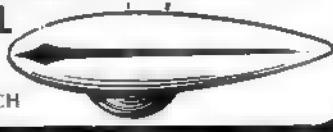
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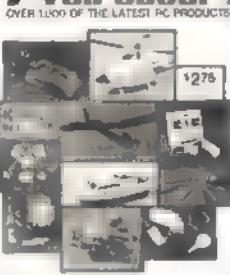
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and operate all control surfaces, one must simply turn on the receiver-transmitter switches. All experimental aircraft are constructed from standard building materials such as balsa, hardwood, polystyrene foam and Mono-Kote.

The motor glider uses a folding prop to reduce drag. And, if the landing approach doesn't satisfy the pilot, he simply switches on the motor, lines up for another pass and puts it down just where he wants it! What does this portend for the future of spot landing contests!!??!!

All the data on the Mabuchi fleet of planes is not in hand—the following is all that has been made available: Glider—Model No. MG-2—1.8 kgs (about four lb.). Four-channel—Model No. 4M-9—2.3 kgs (five lb.). Two-channel—Model No. 2M2-4—1.4 kgs (three lb.).

Fourteen and 18 cell battery packs are used, each charging at six to seven amps for approximately ten min. Discharge current runs close to 15 amps, giving approximately four min. of running time. However, cooling air is required to keep the motor from overheating.

Right now the Mabuchi Motor Co. is experimenting with ■ new ferrite magnet that could reduce motors to half their present size with increased power and less current drain. Who knows? With all the development going on, electromotive power plants for RC planes might just be right around the corner!!!

Editor's Note: Astro Flight, Grauper and Galler Industries' electric systems are already available in the U.S.

SHOPPING FOR PUBLICITY

(Continued from page 16)

weekend before the Skyhawks' planned Demonstration Day.

The week before the exhibit, the shopping center began publicizing the Skyhawks' display on its regularly scheduled run of ads and commercials. Meanwhile, the club printed up brochures promoting its Demonstration Day and giving a brief history of RC modeling.

On the day of the exhibit, the Skyhawks arranged their models on

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Scratchbuilding is coming into its own today and C-9's are blazing the trail for those modelers who complain "But the finished model is not at all like the authentic plane on the box and I did a good job according to their plans," adding "when I build your models they always look like the picture — the box" — was proud of them.

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tables and in roped-off areas in the shopping center mall. Thousands of weekend shoppers stopped to look at the planes and watch on-the-ground demonstrations conducted by the club members. Many who would never have heard about Demonstration Day made plans to attend the following weekend.

Needless to say, with this kind of pre-exposure, the Skyhawks' Demonstration Day was a roaring success. An announcer kept the spectators informed as the club members performed with both Pattern and Scale models. Both local TV stations were on hand with film crews, and their evening news shows exposed thousands of other eastern Iowans to the fun of RC flying.

The idea of a shopping center display worked in Cedar Rapids—it can work in your town, too. Shopping centers are always looking for unique and interesting ways to attract shoppers, and a display of RC models fits their requirements perfectly. Best of all, more people will be exposed to this hobby of ours in an hour in a shopping center than in a year at our flying fields.

It's a remarkable idea: You help the shopping center and the shopping center helps you.

ON THE SCENE

(Continued from page 12)

might not become airborne before hitting a small jetty, which was in the line of flight, and not too far away. "UP UP UP," cried the crowd. UP UP UP went the Hanriot, up the side of the bank and over onto its top wing.

Judging was done in accordance with the following simple rules: (1) ROW (rise off water) required, no hand launch permitted. (2) Four official flights per entry. Highest flight score to count. (3) 0-50 points for takeoff realism; 0-25 points for flight realism; 0-25 points for landing realism. (4) Minimum of five sec. of flight (after lift off). (5) Mooney type Scale judging after flying.

AMA style judging can take a great deal of time; and it is a fact that a judge frequently finds it difficult to maintain his objectivity. As he moves from model to model, he sees whole new vistas of Scale excellence open up before his eyes. Mooney type judging has gone a

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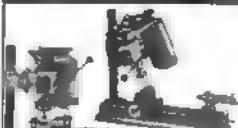
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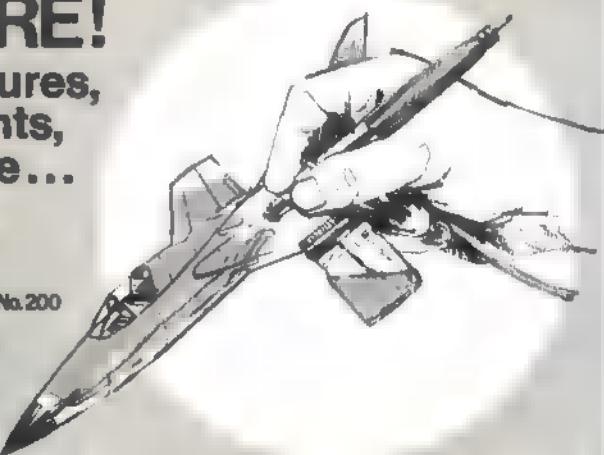
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long way toward minimizing these problems, at least at the less serious Scale contests. Only those models which have made qualifying flights are eligible for Scale judging.

All such eligible models are lined up in a row and shifted in position until, in the opinion of the judges (based on the finish, covering, construction, detailing, etc.), the best model is first, second best is next, third best third, etc. If a contestant wishes to register a beef, he is more than welcome at this point to do so. Mooney points out that there have been no beefs in more than a year of such judging. Points are then awarded on the basis of first, second, third, etc., with scale points and flying points weighing equally toward determining the winner.

At contest's end, trophies were awarded through third place in all five classes of competition.

With the contestants' enthusiasm just about the only thing undampened by noon when the contest ended, the

fliers wrung out their soggy models, took an oath to do better next time, and departed to the Villa Park home of Fernando Ramos for the club sponsored picnic. That was a great climax to a morning of fun.

WESTERN FRONT JAMBOREE

(Continued from page 28)

tion of very interested spectators—all contributing to an almost textbook contest.

Prior to the Maneuvers event, and during the lunch break, comic relief was provided by the incredibly huge "der Krotestern"—the 14-ft. 8-in., 20-lb. Toadstar resplendent in German markings just for the Jamboree.

The afternoon winds started coming up and it took less than a four-ft. takeoff to get that monster to ROG. Floyd Carter flew a fantastic spectator show—first losing one engine in flight. And then the

other. Careful piloting brought the twin-engine Toadstar (now a no-engine glider) to an expertly executed touchdown, right on the spot and completely deadstick. A real show stopper.

During the WWI Maneuvers that followed, the winds kept increasing. So, after the first two rounds were completed, a pilots' meeting was held and all agreed to conduct the final round on Sunday morning.

After the first day's events, our host, Irv Perch, set up a marvelous dinner for about 25 contestants and their guests at his Flying Lady Restaurant. Situated on a hill overlooking the first tee of Hill Country's golf course, the Flying Lady is a first class restaurant with an early aviation motif. A full-size Bleriot replica hangs from the ceiling and RC models, aircraft photos and paintings, and other aviation memorabilia round out the decor.

On the second day, after Maneuvers were completed, Col. Thacker emerged as the winner. Nick Maire and Gerry

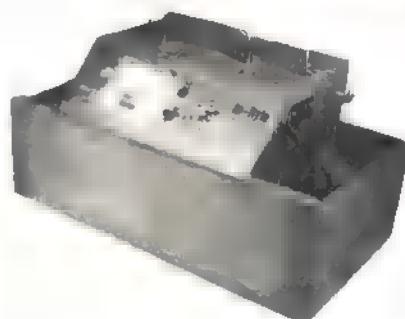
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achieved a 5 to 1 victory margin.

Gene Pond and his Fokker Eindecker scored highest, followed by Bernie Yurash. Third place in Missions was taken by Gerry Wolfram and his D. VII. Gerry was the sole victor over the balloon menace. Nick Maire, Walt Hurley, Jim Sunday, Ken Willard and Lee Druckman all had problems combating wind and the strungup balloons.

The final event was the two-plane Combat Team. Scores were based on placement, innovation, maneuvers and proximity. The team of Lee Druckman flying a French Morane, and Ken Willard with his Fokker Heinrich (Forgive him, Tony!) narrowly edged out Gene Pond and Gerry Wolfram. Third place was taken by the two triples—Rittmeister Maire and his Dr. I teamed with the Sopwith flown by Lieutenant Hurley. Fortunately, there were no losses in this final event.

The scoring was tabulated by Larry Groves, the Pioneer's 16-year-old Scale contest tabulator. After the scores were tallied, Col. Thacker of San Clemente, California, was the Grand Champion. The Grand Champion trophy was one of George Popa's unique creations, a stainless steel wire scale model of an Eindecker. Gerry Wolfram placed second.

The Western Front WWI Jamboree has tremendous potential, a great flying field, fantastic support from Hill Country and the world's best RC flying weather. Scheduled for late September each year, it will attract WWI scale enthusiasts from all over the West.

TESTS/OS MAX 49H-RC (Continued from page 42)

It pays to get familiar with each engine and carefully observe the differences between each. Two engines of the same make often do not run or adjust the same. This is the result of the combination of variations of all the sizes and tolerances in each engine.

The horsepower graph shows what is becoming a typical pattern for RC engines today: higher horsepower through higher rpm. This doesn't necessarily mean the engine must be operated at peak power. Any engine operates best in terms of life (how soon it wears out) and specific fuel consumption (less fuel required per hp output) when it is operated below peak power. I have recommended lower pitch/higher rpm operation of some engines recently. I don't intend that any engines, except for flat-out performance events, need to be run at the top of the hp curve. The graphs do show the trend towards higher rpm operation.

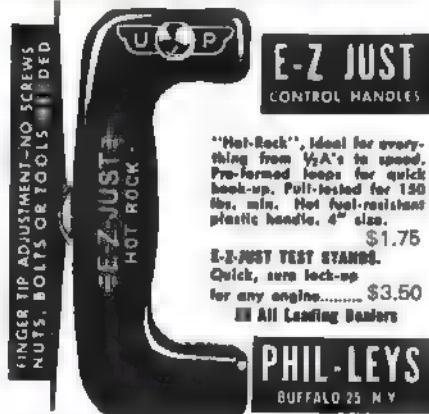
Throttle response of the test engine on the 10-6 prop is almost linear. The OS Max 49H RC is a fine engine.

TESTS/MRC MARK V (Continued from page 44)

ponents are the amplifier board. A bridge amplifier circuit is utilized resulting in a three wire pigtail. All connectors are gold-plated, mil-spec, polarized miniatures. These connectors are added by MRC after importing the radio. The servo gears are a bit noisy indicating the gear moulds could be better. However, the output is smooth and tight. Servo output torque is 21 in-oz.

BATTERIES/CHARGER: The MRC Mark V is supplied with nickel-cadmium rechargeable batteries for the TX and flight pak. A transformer isolated charger is furnished and can be used for charging the units independently or simultaneously, a feature I wish radios would incorporate. Independent indicator lights signal charger operation. 12-14 hours normally required for charging.

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EVALUATION: The Mark V is a well engineered, well performing set which offers the modeler all the major features expected in the price range with extra in the form of the separate charger. The IC decoders and servo amps offer a high potential for reliability and the system is backed by a year guarantee from MRC.

TESTS/WEBRA 61

(Continued from page 44)

resultant hp curve that climbs in almost a straight line. I didn't run the test much over 17,000 rpm so I didn't determine the peak hp of the engine. I would estimate it to be slightly over 18,000 rpm.

The throttle test and resulting graph show some of the irregularities common to the performance of current throttles. There has been a lot of work devoted to throttle design, and a lot more will be done in the future.

McFARLAND ON CL

(Continued from page 46)

some new flyers develop out of this group as well. See "Getting Started In Aerobatics," July 1973 AAM, for good pointers. Try to step up as quickly as possible to a full fuselage, or at least to a plane with the engine mounted inverted or upright. Fuel problems and vibration seem to magnify with a side-mounted engine. The Midwest "Magician" becomes a very good trainer with an upright engine. See February 1973 AAM, Al Rabe's "Mustunt," for some good ideas on a glorified profile with real capability. The method of mounting the engine on the profile "Mustunt" can be applied to other profiles as well.

Steady Engine Run: Roger Barrett (enjoy that Navy retirement, Roger) was plagued by an unsteady engine run which seemed minor, but was enough to affect the total flight performance. Examination of the tank revealed a fractured, cracked and almost completely de-

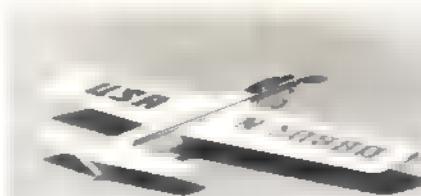
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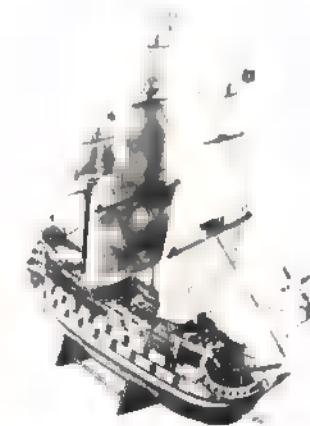


Gene Schaeffer's Genesis flew him to 1st place in Open Stunt at the NATS. Max 35, with 11.5" at 46 oz. (Photo by Boss)



Donna Sheeks holds her husband Jack's original design, his P-26 Peashooter, a Semi-scale Stunter. Wingspan, 61 in., ST 46-powered. (Photo by Jack Sheeks)

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'QUICK ONE'



LOWE ON RC

(Continued from page 47)

The Continuing Saga Of Joe Filler, Boy Expert—Episode No. Four: If you have been following this meandering saga, you will remember that we left our would-be Expert Pattern flier in the midst of the Class C Pattern. He has just finished the knee knocking Figure M, and is headed out into the hinterlands for a turnaround into a Horizontal B. So, here we go... Head back downwind on a parallel track, then call 50' entry. Fly absolutely straight and level by the judges and start your pull-up into a perfectly round loop, placed so that the crossover will be exactly in front of the judges. Caution: a lot of fliers make this first loop small and the second one larger. You will have to practice in different wind conditions to learn how to judge maneuver size and how to compensate for wind.

This is not an easy maneuver. The crossover should be exactly in front, and the transition to the second half of the maneuver should be smooth, without any protracted vertical flight. Other common mistakes are: not being exactly vertical at crossover, and holding vertical too long. You should transition smoothly from the inside loop to the second half outside loop in the aircraft becomes vertical. Continue on around in the outside loop, adjusting as necessary to keep



Arches Adamisin replaces glow plug on his original design, V-tail Snoopy, with wife Sally supervises. Note four-wheeled landing gear—single central wheel, tail-wheel and tip outriggers. The other stuntin Adamisin, Arches' son Dennis, stands ready to make a snappy comment. (Photo by Bill Boss)

Terminated internal pickup line. This is not the first case, but there may be many undetected. I hope to have more information after the subject has been researched. Let's hear about your experiences on this or any other item related to stunt. Lew McFarland, P.O. Box 8177, Lexington, Ky. 40503.

SUDDEN SERVICE PLANS CHECK PAGE 84

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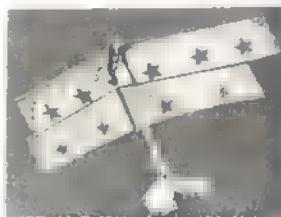
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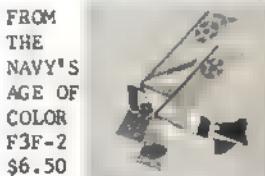
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same size and altitudes as the first loop. Continue into the push-over to vertical and then smoothly pull up and exit on the [redacted] heading, altitude and position [redacted] you entered the maneuver. Sounds easy, doesn't it? It sure ain't—especially with a quartering wind, since you must adjust track and everything else simultaneously.

OK, exit the maneuver. Call "complete." Head out, turn around, and come roaring back for the Double Immelmann. You can do this one either upwind or downwind, but since you now are headed upwind, and it would goof the positioning of the next maneuver to do otherwise, do it upwind. Be sure you've got plenty of steam, since you want plenty of excess speed on top for a smooth rollout. I assume you've called "entry." Pull up immediately in front of the judges into a nice round half loop. Adjust the size [redacted] that it is medium-big, and have good speed on top, immediately after reaching level inverted flight (not before), roll out into upright level flight. Don't cheat by starting the rollout early to keep the nose up. You may want to throw in a dab of down and possibly top rudder to help the rollout.

Practice the different combinations, and find out what's best for your airplane. Hesitate in level upright flight and then start a push over into a half outside loop. Most fliers throttle back in the outside loop and add power during the rollout at the bottom. Complete the outside loop at entry altitude and

roll out to level flight. You must adjust your level flight on top and the outside loop [redacted] that you complete the outside loop and immediately roll out right in front, where you started. A lot of fliers also use top rudder on the rollout on bottom to keep the nose up. You must learn when to blend it, however, to prevent yawing off in heading. Learn to perform the rolls—at the [redacted] rate top [redacted] bottom.

I can [redacted] by the old line count that we've run out of [redacted] this time. We'll leave you breathlessly anticipating the outside loops and other associated assorted aeronautical atrocities.

GUEST EDITORIAL (Continued from page 6)

(2) A good RC pilot has a plan for each flight. By this, I don't mean that each time the good pilot flies, he performs [redacted] of the AMA Aerobatic Patterns. It simply means that he normally flies in a designated area, and practices maneuvers that sharpen his skill. You won't see a good RC pilot batting aimlessly about the sky, giving little attention to airplane trim or position.

(3) A good RC pilot is smooth on the controls. The good pilot doesn't make [redacted] habit of overstressing his aircraft. Sure, he spins and snap rolls his aircraft for fun, but it's a cinch that you won't be able to count his elevator corrections by simply watching his airplane.

(4) A good RC pilot has a good airplane. One of the things that makes a good pilot is a good airplane. His radio is in good shape and checked frequently. His airplane is true and properly balanced. Control surfaces are properly hinged. The engine starts easily and is properly adjusted. His airplanes are well built and adequately finished, and the radio installations are well thought out and neatly accomplished.

(5) A good RC pilot got there through practice. Piloting an RC aircraft is a learned skill. I have yet to [redacted] a good pilot who didn't get there through some all out perseverance and some good old-fashioned fuel consumption.

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gress at his own pace and have some "fun" while improving his skill.

A successful modeler spends some time at contests, either as a competitor or as an interested observer. In my opinion, there is nothing any better for sharpening your skills than competing in an AMA sanctioned meet. I have found that the vast majority of competitors are extremely friendly and intelligent people, who will take the time to answer questions and generally help the newcomer to the contest scene. Even if you don't compete, exposure to a contest will probably provide an insight into the latest techniques for building and flying model aircraft. It might provide the necessary impetus for you to try your hand at the next meet.

PAUL HARVEY VIEWS

(Continued from page 8)

present in youth and wheels enabled them to rise to the bait.

They'd hear of some exotic place—whether Big Sur, a rock concert or a metropolitan drive-in—and they were off.

On motorbikes and in motor cars American school agers were able to pursue each illusion—to disillusion.

The top of each mountain revealed the not very dissimilar other side of the mountain.

Through the 60s and into the 70s restless, nomadic young spun their wheels.

Now they're running out of gas.

Now, as Voltaire knew they would, they're returning home to find the bluebird in the backyard, the family game room or the basement workshop.

The Albany, New York, Times-Union recently headlined: "HAPPINESS IS—THE ENERGY CRISIS."

The paper quoted Dr. Jack Wright of that state's Mental Hygiene Department saying, "If we stay at home we will get much closer to the traditional idea of family as opposed to the external idea of environment."

Chasing from place to place we exhausted our energy; a very logical sequence.

We had yearned for the less hectic world of The Waltons. We were singing the old songs again, visiting museums again, collecting antiques, staying up for old movies or new movies about the old days.

Subconsciously, we knew, even before we were out of gas, that it was time to come home.

MARONEY ON RC

(Continued from page 68)

gories. Included are provisions for engine-assisted gliders (2cc displacement, 45 sec. max engine run).

Rules Official: The AMA Radio Control Contest Board held a final vote on proposal RC-73-3. With a unanimous vote, the board has changed the status of the RC Soaring Rules from Provisional to Official. Proposals RC-73-2 and RC-73-6, which are revisions to Task II IIA respectively, were accepted

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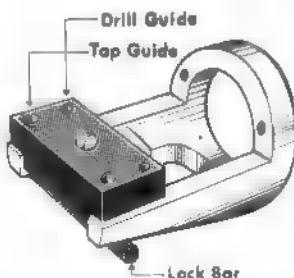
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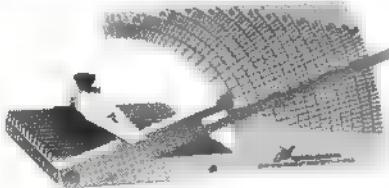
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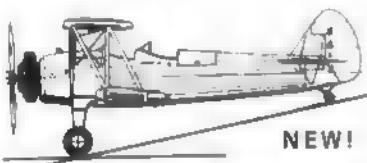
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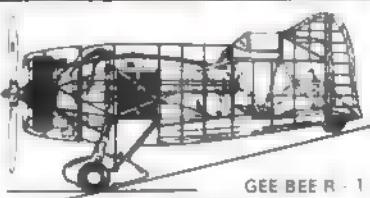
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on a provisional basis only, for trial purposes. Task 11 and IIA modifications should appear in the '74 Rule Book designated as Provisional.

New World Record: A new Distance (Close Course) Record was set at 284.6 mi. by Mark Smith, USA, June 23, 1973. This beats Ladislav Dusek's (Czechoslovakia) record of 270.1 mi. set on September 23, 1972.

Filed with FAI in Paris is a new tentative world's record for Duration set by Valeriy Myaklin and Boris Chkurski (USSR) between September 30 and October 1, 1973 for 25 hr. 44 min. 8 sec. The dossier lists this as a team effort. It may not be accepted, however, as both flew the model. AMA will study the dossier at the Paris (CIAM) meeting and file an objection if it indicates that more than one pilot flew the model.

Floater G-110: A new production kit, the Floater G-110, spans 100 in. and has a wing loading of 7.302/sq. ft. This is more than just a new kit; it has evolved out of many years of producing similar designs manufactured by this experienced company. The Floater includes a new, adjustable tow hook and is priced at \$34.50, postpaid from Frank Zalc, Box 135, Northridge, Calif. 91324.

Malibu II: An improved version of the Malibu I by Astro-Flight is now on the market. The Malibu II differs from the original design in several ways. A new set of plans, new Thermal Wing (the airfoil is the same as the Monterey), new diecut parts, 1/32" plywood fuselage doubler, and a complete hardware package upgrade the kit. The latest version has an orange sticker on the box.

Easy-up: Ridgewood Hobby Supply offers two new, low cost hi-starts employing 3/16" unpainted exercise cord made to MIL-L-5651B Air Force specifications. Kits come in two sizes: a 100-ft. length, called the Easy-up, at \$19.95 plus \$.75 postage; or the 200-ft. length, called the Super Easy-up, at \$29.95 plus \$1 postage. Each kit includes 1/4" thick fir ply reels, a flag, swivel, tow ring, and 536 ft. of 75 lb. test Brownell nylon cord. Manufacturer's address is P.O. Box 2045, Vernon, Conn. 06066.

MEUSER ON FF SPORT

(Continued from page 68)

tests (annuals and regionals). Keith Whitney set the AMA National Record of 27 min. at the Utah State Annual with his Orbiteer. Sal wonders, however, how the Orbiteer is doing in other parts of the country. If you non-Westerners know of any wins or records made by Orbiteers, write to Sal c/o Competition Models, P.O. Box 8012, Long Beach, Calif. 90808. We imagine other manufacturers also would appreciate hearing about wins made by their models.

Auto-Rudder Receives Shock Therapy: I don't know how Isaac Newton got so smart. He built a model plane in his entire life, and yet, he went around making wise guy remarks like, "Every body persists in a state of rest, or of uniform motion, unless compelled by external forces to change that state."

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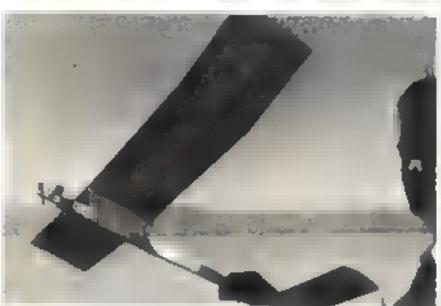
BUD NOSEN

Box 105 A

Two Harbors, Minnesota 55616



Here is the auto-rudder mechanism ■ Carroll Allen's NATS-winning Wakefield (TOP) Rudder in climb position; (BOTTOM) ■ In glide position.



Whitney, Salt Lake City, new AMA ½A Open, Category 2, with nine maxes. Model # 370 sq. in. version of Talib's Orbiteer, kitted by Competition Models.

When a Wakefield ~~is~~ an Unlimited Rubber model winds down, the tensioner relaxes, and the prop stop becomes engaged. The prop tends to persist in its state of rotary motion, just as Sir Isaac said. The result: A traumatic shock to the system. Wing pylons crack, rudders snap off, stabilizers jump off their platforms.

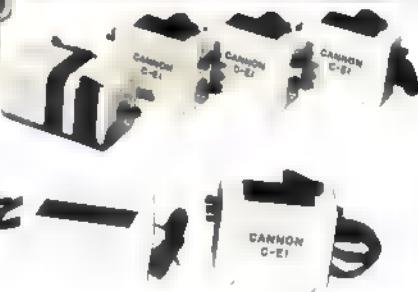
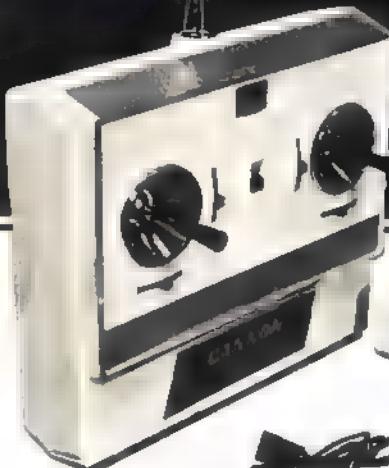
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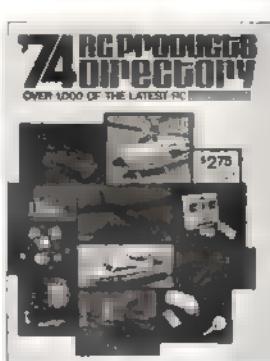
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Roi Anderson's Roamer Unlimited Rubber model won the Mulvihill trophy for the third time in the 1973 NATS. This is the 1973 version with short sheet-covered fuselage, twin wing pylons. Mulvihill trophy was donated in 1923 by B.H. Mulvihill, then vice-president of the National Aeronautic Association.

Mindi Linstrum, 12, doesn't confine her Free Flight talents to Gas models; she won Junior Class C Gas at the '73 NATS. She is holding her Garaghty-designed Driftwood HL Glider. Drawing appeared in September 1972 AAM.



mounted prop-stop pin, etc. Don Edson, however, to have employed the adage, "If you can't lick 'em, join 'em." He put the prop-stop shoe to a useful purpose: The shock actuates the auto-rudder. When the prop hits the stop, the fuselage rolls and throws the stab off its platform on the left side, and the stab knocks the rudder-positioning wire out of its notch. Presto: instant right rudder!

Don's sketch gives the details. Far out? Too fancy? Consider the alternative ways to actuate an auto-rudder: A clockwork timer, a line triggered directly from the prop-stop, a Xenakis type torque sensing mechanism. All are far more complex than Don's scheme. Many fliers, and some very successful ones at that (such as Bob White), don't fuss with auto

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surfaces at all. If they fly a right-right pattern (right turn in both climb and glide), the necessary right rudder tends to ~~turn~~ the model into the ground if it should ever get its nose down under power. If they fly right-left, the opposing right thrustline and left rudder probably results in increased drag, and a turn circle that tends to open ~~turn~~ toward the end of the power phase.

Has it been proven in competition? You bet! Carroll Allen used the scheme on the model with which he won the 1973 NATS. For ~~an~~ encore ~~he~~ took top place ~~in~~ in Galesville FAI Team Selection Semi-Finals ~~in~~ month later.

Papers For The 1974 NFFS Symposium Report: The SYMPOSIUM is presented annually at the NATS by the NFFS in cooperation with AMA. (You may submit a paper for publication in the SYMPO report even though you are not ~~able~~ to attend the NATS.) Its primary purpose is to promote and encourage the investigation, discussion and documentation of the technical side of Free Flight.

Articles addressing historical, administrative, documentary, and philosophical aspects of the sport ~~are~~ also included. Those of you wishing to contribute a paper can do ~~so~~ by contacting John Ferrer, 9100 Rayford Dr., Los Angeles, Calif. 90045.

Possible subjects for papers are many and varied, as can ~~be~~ seen in past Symposium reports. An ~~area~~ that has not been covered extensively is structure. Consider the dynamics of wing flutter with the new non-stressed type mylar coverings. Or, what about the efficiency of dihedral joints? Most soaring birds have a wing loading many times greater than our models yet have a lower sink rate—why? Why do ~~some~~ models lock into thermals easily while others do not? The topics are endless, so lets hear from you.

Please submit your ideas and intentions as soon ~~as~~ possible. The complete paper must be submitted no later than May 1, 1974.

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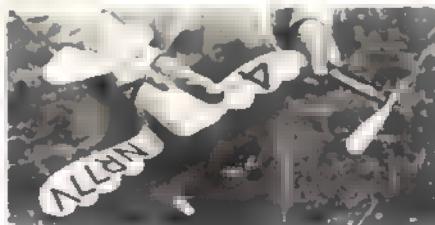
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Caudron C-460 by Garafallow sped to a second place in Shell Speed Dash.

Thompson trophy winner Gee Model by Royall Moore. He used two motors and geared prop for power.



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sure to everyone else on every flight. If he can stay cool, he can win; or he can get sweaty palms, nervous twitches, or blow his motor which could be his elimination from further competition.

Novak reports the FAC Fall meeting races: "This contest was an exception. Chet Bukowski took first in the Shell with his 'Jeep' with 159 sec., second Dan Garafallow and his Caudron C-460 with 103 sec., third went to a Junior, Tom Nalen, Jr. in his Marcoux Bromberg R-3 with 87 sec.

"Six planes hotly contested the Grove Trophy. The 'Jeep' won, the Caudron was second, and Ed Novak's Bonzo came in third.

"Chet Bukowski's 'Jeep' looked like a shoe-in among the ten entries to take the Thompson Trophy also, but it was not to be. It was eliminated with only two flights remaining by coming down in a dive. Royall Moore and his Gee Model Z and Tom Nalen, Jr. and his R-3 fought it out in the final heat. It looked anybody's race, but the R-3 pulled it out by using ground effect to win by less than a second."



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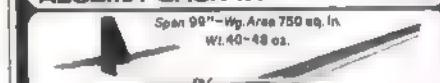
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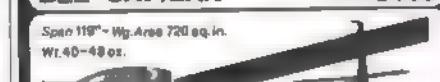
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JOHN BLUM ON CARRIER
(Continued from page 52)

slanted lines are usually used when a section is cut through a solid object. The experienced blueprint reader will know the term cutting "plane" to describe the straight directional "cut" through the object at the section line. (We'll leave a complete explanation of the term "plane" to another column.)

The sketch also illustrates the three normal views: (1) Upper left is the top view; (2) lower is the front view; and (3) lower right is the right end view. There are variations of this, of course, as our model airplane drawings represent a type. However, engine drawings are a good illustration.

Information Source: Jim Cservenka of Brookpark, Ohio, suggests that readers make requests to Naval Aviation News, Office of Chief of Naval Operations, Navy Department, Arlington, Va., 22203, for lists of available booklets, data and specific info on Naval aircraft.

MODELER MAIL
(Continued from page 8)

things started dropping again, but have picked up a bit now for my interests.

I miss Straight and Level a lot, but I think you are on the right track with the new editorship and realize that I am in a minority, even a deviant. Save for the not too lucrative Peanut Scale and CO-2 areas, the design-it-himself, or re-worker of various scale plans for light Scale FF and Indoor Scale doesn't even register on your survey scales—especially if the builder is over 40. Nevertheless, there may be more kooks around like me than your statisticians can ever get at. Collectively, we may just have enough acumen (if thrown some tasty bones now and then) to add a bit of spice between the wiring diagrams. Without thinking of us fuzzy feathers out here, you just might lose your chance for total greatness. Some of the special treats now gone are things like Bjorn Karlstrom's double color spreads. The color was too expensive? O.K. Then use black and white half tones with color notes. They wouldn't have to be WWI—anything which is a good model subject from Pioneer to vintage stages would do. How about a planned get-together by Walt Mooney, Doug McHard and Ken McDonough? The result could be each one's version of a single aircraft put into a trilogy plan for Scale Indoor-Outdoor Rubber, CO-2 and O10, or Bambi diesel. In a way, the pilot



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project was already done in your Pilatus Porter combo article which was great. Now you could put the greatest light FF scale artistry in the world together in a unique package. I wonder if they all play the same bagpipes?

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Keep up the good work and don't forget us moldy figs.

John K. Sniffen
 5206 Tumblebrook Dr.
 Oshkosh, Wisc. 54901



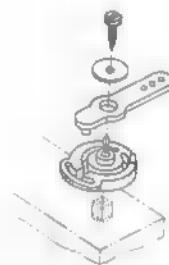
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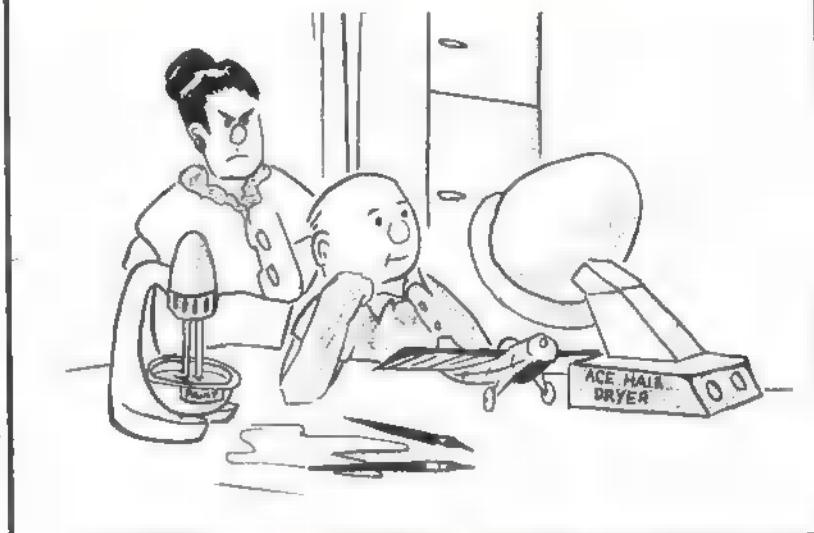
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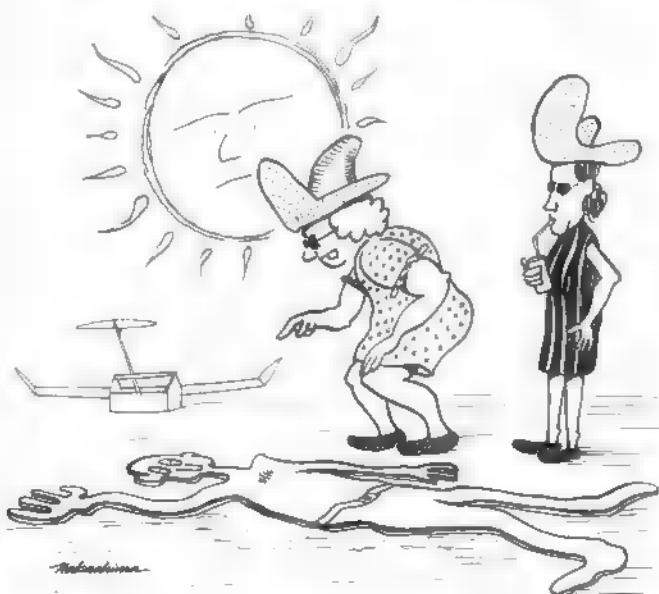
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'74 Nats Goes to Louisiana

In a vote by mail, the Executive Council (AMA's board of directors) has overwhelmingly approved the location of Lake Charles, La., as the site for the 1974 National Model Airplane Championships. The council was polled subsequent to sending particulars concerning the Lake Charles offer to other areas which had indicated interest in being host to the Nats; none of these locations indicated they had a competitive offer.

The council also approved the week beginning August 5 as the basic time period for the 1974 Nats—which coincides with availability of nearby college dormitories. But the possibility also exists for expanding the Nats to about 10 days so as to include many activities which previously were left out of the schedule due to lack of time: RC Soaring, Quarter Midget Pylon, RC Helicopters, etc.; and other events which previously have been squeezed in could have their own time slots: Old Timer Free Flight, Slow Combat, Mouse Race, etc. As currently approved, the dates are from August 5 through August 11; if an

expanded schedule is approved, the Nats might end on August 15. The AMA Executive Council will decide whether to accept an expanded schedule after the Nats Executive Committee has produced its recommendations.

Lake Charles is in a near direct line between Houston, Tex., and New Orleans, La., 140 miles west of the Mississippi River, 35 miles from the Gulf of Mexico. Outdoor events will be flown from the former Chennault Air Force Base which served for B-47 operations prior to deactivation. It is closed to full scale aircraft now, although there is a small crop dusting operation off to one side of the field (which does not seem to pose any serious problems for a Nats operation). The field is controlled by the city, and the offer of the facility at no cost for the Nats has the blessing of the mayor.

The site is huge, a welcome contrast to cramped quarters—especially for Free Flight—at Oshkosh last year. The main runway is 12,000 feet long and 200 feet wide. And there are two immense concrete

areas of at least 1,000-ft. width; one is almost 4,000 feet long, and the other is over 5,000 feet. Free Flight, for instance, will have a chase area within the field of over a mile in several directions (plus more open area beyond in many directions, and no corn or other problem crops are evident); if the prevailing wind down the main runway holds forth, there is a chase area of more than two miles!

Three empty hangars on the field are well suited for a contestant workshop, administrative offices, hobby shop, Delta Dart activity, etc. One of the hangars with a 60' ceiling could be used for Indoor flying, although its exposed girder ceiling might present a substantial hazard for the models.

Another low ceiling (52') building about three miles away could be used (at a rental fee to be negotiated); it is a new arena-type building having smooth ceiling and walls. Also being looked into is the possibility of using the Goodyear blimp hangar near Houston, about 130 miles away; this building's ceiling has some beams but no trusses, about 90 to 100 feet high. If the expanded Nats schedule should be approved, there is even the possibility of two Indoor sites and contests—the higher ceiling for the 'pros' at Houston, the lower ceiling at Lake Charles for the casual flyers; but neither would be exclusively for the 'pro' or casual flyer.

Who should be thanked for locating this magnificent Nats site? Our hats are off to John L. Embry, president of the AMA chartered Lake Area Radio Kontrol Society. He and his club did all the basic leg work in ascertaining availability and description of the site, and putting AMA HQ in touch with the appropriate officials. The LARKS, plus other clubs in the area, will also play a big role in helping put on the Nats in August.

Want to know a little more about Lake Charles and Chennault AFB? Here's some of what Embry wrote earlier to AMA: "The 1,700 acres of Chennault are located



View of Chennault Airport from a lightplane. Note that the runway directly ahead goes practically to infinity—12,000 feet long and 200 feet wide! It's big by any standard.



on the east side of the city of Lake Charles. The area is a coastal plain with some forest, but mostly open farm (rice) land. Prevailing summer winds are south-southwest. July temperatures run in the 90-100° range. Winds this time of year would probably average three to eight miles per hour. Lake Charles is the largest city of the area, with approximately 100,000 population. However, the entire urban area consists of several towns and cities in close proximity to a very large industrial complex with a total population of nearly 250,000."

Nats housing consists of camping, college dormitories, and nearby motels. There is plenty of camping space on the airfield but without electricity or water; a state park about 12 miles away provides full camping services at modest cost. Modern air-conditioned dormitories approximately three miles from the airfield will be available for around \$3 or \$4 per night per person; over 1,000 berths are available, with some of them for families. Also, the college dining room will be kept open for breakfast and evening meals. Many excellent motels are within 5-10 miles of the airfield, and two are within a mile.

If the reader concludes that we are impressed with Lake Charles as the location for the 1974 Nats, he is right! In addition to being probably the best physical facility ever made available for the National Contest, there are many other factors which are to our advantage: some affect the entrant directly, others indirectly.

The airfield will be ours for the entire Nats period—no daily restrictions as to hours of operation. Portajohn and trash pickup services may be donated to us or provided at a minimum cost of only the employees' labor involved. National Guard, Civil Air Patrol and Boy Scout help has been offered; in addition, the local ham radio group has been contacted and is willing to help with communications and model retrieval. A walkie-talkie type field communications network appears to be available through a local model club leader who has access to these via his company.

Family considerations ■ excellent. Besides low cost sleeping accommodations, there are many eating places near the college dorms, good shopping centers and an excellent public beach on Lake Charles, within ■ few miles of the field; also, the airfield swimming pool, maintained by the state university, has been offered to us. And there are no parking space problems on the airfield—ample ■ in all areas: hangars, model flying, camping, etc.

But most of all, the city wants the Nats to come to Lake Charles—from the top official, the mayor, on down. There is such ■ spirit of eagerness in the air that the event is bound to be one of the most successful Nats ever.

The only bit of gloom when this was written in December concerned what effect the "energy crisis" may have on travel for model flying activities. We see some evidence of panic right now (in December) but



Welcoming committee for AMA visit to Lake Charles in November included (L-R) Larry Bolich, PR director for the city; Ned Barnes, Lake Area Radio Kontrol Society; Francis Nixon, LARKS; John Embry, LARKS; Pat Thomas, director of Information Services, Chamber of Commerce; Gary McKinnon, Holiday Inn manager. Embry, as president of the AMA chartered LARKS, was the leader of the effort to bring the '74 Nats to Lake Charles. Bienvenue ■ "welcome."



conclude that our crystal ball is not sufficiently clear to see what the situation will be in mid-summer. Perhaps the full extent of the crunch will be more evident when this issue reaches readers or by the time of

the expected AMA Executive Council meeting in February. In the meantime, AMA officials are proceeding with optimism that the 1974 Nationals and other contests will go on as planned.

Below: The double hanger at left is for the contestant workshop, Nats AMA HQ, hobby shop, Scale cage, etc., while the — — the right is ideal for Delta Dart building/flying and other youth programs. Control Line flying — be on ramp in front—walk to circles.



6-Ring Spectacular for the U.S. in 1974

Scale and Indoor World Championships will be held at Lakehurst Naval Air Station, New Jersey, during July 1-7. The Federation Aeronautique Internationale recently approved a U.S. offer to host the event. In addition, several other major competitions will be included in the week-long package which is currently being called the AerOlympics.

Besides Indoor there will be World Championships for Radio Control and Control Line Scale. Also planned are international class RC Soaring and Pylon Racing competitions. In addition, the Old Timers Nationals for antique-type Free Flight models will be held from July 2-4 at the same site.

Never before has such a combination of prestigious aeromodeling events been offered. Already, indications are that at least a hundred competitors from European countries may be expected, and a special

charter flight is being arranged in England to bring about twice that many to the U.S.

Note the difference between FAI World Championships and international class events. For World Championships, only three team members per country per event are permitted. But for international class events, one notch below the World Championships class, unlimited entry per country is possible. For the U.S., however, in order to avoid swamping the facilities at Lakehurst, a limit of approximately ten entries will be accepted for RC Soaring and for Pylon Racing.

Scheduling of this tremendous event was made possible late in 1973 when the commanding officer at Lakehurst approved an AMA request for use of the facilities during the July 4th week of 1974. Lakehurst has been the scene of many AMA meets in 1973, besides being the Indoor site of many past National Championships

and also for many World Championships team selection contests.

Lakehurst is located about midway between New York and Philadelphia, within 15 miles of many Atlantic Ocean beaches. Because of the beach situation in July, early motel reservations are vital for those interested in attending the events at Lakehurst. A word to the wise: reserve early to be assured of a place to stay. While very little motel space is available in Lakehurst, much more is available at Toms River and Seaside Hts., N.J.—look these cities up on a map and also other nearby cities, then check with the Chamber of Commerce for motel lists.

More on the AerOlympics will be published each month in these pages. Energy crisis or not, the event is shaping up to be one of the greatest aeromodeling programs ever held anywhere.



Scale models to beat in the 1974 World Championships? Mo 163B1 by Simon of Germany, above, currently holds the World Champ title for RC. Illyushin Il-2M3 by Podgorski of Poland, right, — runner-up in CL last time. Indoor World Champs also slated for Lakehurst.





Where is your nearest flying field? Where can you find help with your modeling projects? Who are the modeling leaders in your area? Who can give you good advice about the best kind of planes and equipment? Who can help you find answers to technical questions about models and equipment? Where can you find a test pilot?

If you don't already know the answers to each of these questions, you will find extremely useful this listing of 1973 AMA Chartered Clubs (plus a few newly chartered for 1974). Contact the person listed (usually the secretary) for the nearest club of your modeling interest—to obtain times and places for meetings and flying sessions, plus details for joining.

The principal kind of model interest for each club is shown by a one-letter code: R—Radio Control, C—Control Line, F—Free Flight, S—Scale, I—Indoor, M—multi-interest.

The list includes 900 AMA Chartered Clubs having a total of more than 27,000 individual AMA members. If the club to which you belong is not AMA chartered, send to AMA HQ for free club charter information. All chartered clubs are provided with liability protection, and they may also obtain low cost liability protection for owners of flying sites (and other facilities used by the club)—a tremendous help in obtaining and keeping precious space for model flyers.

AMA Chartered Clubs

ALABAMA

Birmingham Aero Modelers Assn., F.C. Newman, Rt. 12, Box 20007, Birmingham 35215	M
Confederate Min. Air Force, E. Wayne Chancy, 126 Virginia Dr., Hueytown 35020	R
Decatur MAC, Charles Ruark, 2025 Eastmade Ave., S.E., Decatur 35601	R
Ft. Rucker RC Club, Neal Christensen, 106 Valley Hill Dr., Enterprise 36330	M
Gadsden Aero Modelers Association, Norris Greene, Rt. #10, Box 83, Gadsden 35901	M
Gulf Coast RC Club, Alvin D. Reed, 57 Mohawk St., Mobile 36606	R
Huntsville Aeromodelers, T.L. Killough, 7805 Mallard Rd., S.W., Huntsville 35802	M
M.A.C. of Huntsville, L.R. Baker, Jr., 701 Essinger Rd., S.E., Huntsville	R
Rocket City Radio Controllers, George Smith, 8117 Strong Dr., Huntsville 35802	R
Radio Aero'mdls. of Montg., J. Strong, 1158 Josephine Ave., Prattville 36067	R

ARIZONA

Arizona RC Society, Charles Bailey, 11634 W. 25th Ave., Phoenix 85029	R
Arizona Soaring Club, C. Robert Von Hellens, 920 E. Missouri Ave., Phoenix 85014	R
Air Zone M.A.C., Tom Kilday, 8544 N. 13th St., Phoenix 85014	M
Cholla Choppers M.A.C., Bob Reynolds, Rt. 8, Box 51, Tucson 85710	C
Condors of Luke AFB, William Palmisano, 6226 W. Elm St., Phoenix 85033	R
Dune Dusters RC Society, Tom King, 3801 N. R.P., Yuma 85364	R
Miniature Aircraft Pilots Assn., G.R. Brant, 3231 W. Shangri-La, Phoenix 85029	R
Tucson Radio Control Club, Dean Ayers, 8401 Calle Pegaso, Tucson 85710	R

ARKANSAS

Fayetteville Aeromodelers, Morris Collier, 724 Missouri Way, Fayetteville 72701	R
Fr. Smith Flightmasters, Leon Luker, 1530 S. 40th, Ft. Smith 72901	R

Arkansas RC Soc., Keith Kreth, Rt. 5 Box 684, Little Rock 72207	R
Pine Bluff RC M.A.C., Michael H. Waymack, 2300 Dianne, Pine Bluff 71601	R

CALIFORNIA

American Model Airport Assn., Joe Lesi, 1285 Romana Ave., Chino 91710	R
Antelope Valley Tailwinds, Inc., Bob Baldor, 835 W. Ave. H-B, Lancaster 93534	R
B.A.R.K.S., Inc., Wesley Redwine, Jr., 2820 Alta Vista Dr., Bakersfield 93305	R
B.J.R.D., Inc., Larry Jenno, 1815 Peninsula Verde Dr., Lomita 90717	M
Black Bart Flying Club, Carl Stroh, 26747 Dutcher Creek Rd., Cloverdale 95426	M
Camarillo Flying Circus, Eugene C. Nicholson, 835 Rosewood, Camarillo 93010	R
Capitol Condors, Edmund G. Ballinger, 3029 Great Falls Way, Sacramento 95828	F
Central Valley RC Club, Dell Henry, 310 S. Crespi, Exeter 93221	R
Chico RC'ers, Fred Weaver, 428 W. 12th Ave., Chico 95926	R
Chula Vista Model RC, Ken Davis, 1808 E. 16th St., National City 92050	R
Concejo RC Modelers, Loren McCray, 2995 Silver Cloud, Thousand Oaks 91360	R
Cordova Model Masters, Inc., John Stanley, 4721 58th St., Sacramento 95820	R
Corona Model Airport Assn., Johnny Janssen, 719 E. Francis, Corona 91720	R
Crash Crew, Joe J. Schuck, 319 Hanalei Dr., Vista 92083	C
Delta Valley Modelers, Donald Gomez, 5463 Barre Ave., Stockton 95205	R
Diablo Valley RC'ers, Inc., Wm. Doughty, 3847 Quail Ridge Rd., Lafayette 94549	R
East Bay Radio Controllers, Gene Cantrall, 1601 Broadway, #C, Alameda 94501	R
Eastern Sierra Flyers, Art Banks, P.O. Box 1026, Bishop 93514	R
Eureka RC Club, Steve Benson, 316B Prospect St., Eureka 95501	R
Fort RC Modelers, James Byers, 61 Logan Ln., Monterey 93940	R
Fresno Gas Club, Bill West, 2972 E. Floradora, Fresno 93703	F
Fresno Radio Modelers, Inc., Patricia Boroff, 727 Sierra, Fresno 93704	R



Harbor Soaring Society, Robert O. Hanson, 9122 Kapaa Dr., Huntington Beach 92848	R	Tustin Model Club, Dale Willoughby, 14695 Candeda Pl., Tustin 92680	M
Hueneme Stick & Rudder Club, D.L. Thompson, 320 Edl Sur Way, Oxnard	M	Prop Busters, Donald E. Hall, 150 Oak Manor, 95482	M
Junior Birdmen, Richard Miller, P.O. Box 877, San Leandro 94577	M	Vaca Valley Controllers, James Wood, 1048 Flicker Ln., Fairfield 94533	R
Kings County RC, William R. Theis, 1155 Lassen Dr., Hanford 93230	R	Valencia Valley Headwinds, P.B. Journe, 26803 Lugar De Oro Dr., Valencia 91355	R
Long Beach Glider Guiders, Joseph Kru Sr., 2408 Dashwood, Lakewood 90712	R	Ventura County Comets Club, Hugh Bean, 2045 Langley, Oxnard 90303	R
Marin RC Group, Louis Lombardi, 36 Cottonwood Dr., San Rafael 94901	R	Visalia RC T-Birds, Wayne Boydston, 3403 Sue Ln., Visalia 93277	R
Merced RC Club, Edward Wood, 1620 Yosemite Park Way, Merced 95340	R	Willing Able Modelers, Gary Buffon, 7134 Blake St., El Cerrito 94530	M
Miniature Aircraft R/C Soc., Charles Comstock, 834 E. Virginia St., Rialto 92376	R	Wing Busters RC Club, Chuck Hagan, 1115 Via Alta, Santa Maria 93454	M
Mission Bay Prop Twisters, James Peterson, 1805 Boronia St., San Diego 92111	C	Woodland RC Club, Robert W. Knowles, 255 Berryessa Dr., Vacaville 95688	R
Modesto Radio Control Club, John Hammons, Box 107, Cresssey 95312	R	Club, William McConachie, 4111 Ameranta, Palo Alto 94306	F
North Bay Soaring Society, Harry Menke, 467 Sebastopol Ave., Santa Rosa 95401	R		
Northrop Modelers, Earle D. L'Homme, 11 W. 129th St., Hawthorne 90260	R		
Oakland Cloud Dusters, Steve Geraghty, 2858 Pinecrest Ct., San Jose 95121	F		
Oh! 49ers, David Fitzgerald, 3933 Kingridge, San Mateo 94403	C		
Pacific RC Soaring Assn., Michael J. Fox, 9161 Stanford, Garden Grove 92841	R		
Palomar RC Flying Club, Inc., R. Wianiewski, 1125 Arcadia Rd., Encinitas 92024	R		
Pasadena Soaring Soc., G. Stevenson, 1830 N. Sierra Madre Villa, Pasadena 91107	R		
Peninsula Channel Commanders, James Alley, 3004 Hillside Dr., Burlingame 94010	R		
Pioneer RC Club, Inc., Robert Fowler, 1843 Austin Ave., Los Altos 92044	R		
Pomona Valley M.A.C., Louis N. Casale, 7829 Buena Vista, Cucamonga 91730	R		
Quarter Midget Racing Club, Mel Santmeyers, 10550 Western, #153, Stanton 90680	R		
Radio Aircraft Modelers, M.R. Carey, 154 Revilla Dr., Castroville 95012	R		
Radio Control Bees, Inc., Frank Heyer, 10226 Homage Ave., Whittier 90604	R		
RC Bees, John E. Nohrden, 116 Prospect Ct., Santa Cruz 95060	R		
RC League of Orange Co., R. Headring, 8242 Priscilla Dr., Huntington Beach 92647	R		
Redding RC Club, Jack Tuck, Box 848, Project City 96079	R		
Redwood Modelers, Lewis Ford, 1930 Cooper Rd., Sebastopol 95472	R		
Riverside RC Club, Clyde Reed, 6657 Cathy Pl., Riverside 92504	R		
Rockwell Int'l Flightmasters, Jack McCracken, 15522 Lefloss Ave., Norwalk 90650	S		
Sacramento Red Barons, Ed Hamlin, Jr., 8377 Samm Ave., Roseville 95678	R		
Sacramento Valley RC Club, D. Richardson, 4206 Holmby Ct., Sacramento 95821	R		
San Diego Drones Club, Don Coleman, 9550 Murray Dr., La Mesa 92041	R		
San Diego League, Harley Condra, Long Beach, San Diego 92010	R		
San Diego Orbiteers, Bob Beacroft, 4475 Utah St., San Diego 92118	F		
San Fernando Valley RC Flyers, J. Rapaport, 13939 Burton St., Panorama Cty. 91402	R		
S.F. Valley Silent Flyers, M. Neuschatz, 2840 Seattle Dr., Los Angeles 90046	R		
San Gabilan Valley RC League, L. Frey, 1704 Old Canyon Dr., Hacienda Hts. 91745	R		
San Joaquin RC Modelers, John Wulff, 7916 Misly Ln., Stockton 95207	R		
San Jose Wavemasters, Harold Yates, 6100 Monterey Rd., San Jose 95119	R		
Santa Barbara RC Modelers, M. Laddom, 3717 Portofino Way, Santa Barbara 93105	R		
Santa Maria Valley Flyers, Rudolph Taube, 889 Sunnyside Ave., Santa Maria 93454	C		
San Valders, Bill Hunter, 10701 Sharp St., Mission Hills 91340	F		
S.C.A.M.P.S., Abraham H. Galas, 8362 Castillan, Huntington Beach 92646	F		
Sierra Flyers, Ken Lawyer, 648 Palm Ave., Yuba City 95981	M		
Silent Few Soaring Society, Joe Malloy, 8802 Friends Ave., Whittier 90602	R		
Simi Valley Flyers, Bernard Napoli, 2487 N. Lita Pl., Simi Valley 93063	M		
Skyburners, Don Wiss, 15317 Leahy, Bellflower 90706	M		
Sky Hoppers of Orange County, Mel Schmidt, 1140 Sturbridge Dr., La Habra 90631	C		
Sky Kings, Sam Sciacca, 1831 Burke, Visalia 93277	F		
Sle Flyers, Stanly Newton, Broad St., San Luis Obispo 93401	F		
Soaring Union of Los Angeles, Mild Swan, 2235 Cove Ave., Los Angeles 90039	F		
South Bay Soaring Society, H.J. Smith, 881 Tertarian Way, Sunnyvale 94087	R		
S. Alameda Co. RCers, Don Stillwell, 728 Lippert Ave., Fremont 94538	R		
Southern Calif. Auto T. Craig Cusick, 20134 Graham St., Canyon Park 91306	R		
S. Calif. Ignition Flyers, R.G. Bruckner, 4239 Centinela Ave., Los Angeles	F		
South Sacramento RC Flyers, Brian Gregory, 2952 Meadows Pl., Sacramento 95822	F		
Speed Flying Anyone?, Frank Kelly, 7005 Spring St., Long Beach 90808	R		
Stockton Gas Model Assn., Walter Gho, 329 Adondo Ct., Stockton 95207	C		
Thermal Thunders, Jim Quinn, 2813 Via Cerrillo, Palos Verdes Est. 90274	F		
Thunderbugs, Ed Kelley, 4202 W. 172nd St., Torrance 90504	F		
Torrey Pine Gulls, Andre Faure, 1303 Rainbow Ridge Ln., Encinitas 92024	F		
Tracy Skyliners, James Stocka, 432 Laguna Ct., Livermore 94550	F		
Tri Valley RC Modelers, John Lesuer, 2189 Lake Marie Dr., Santa Maria 93454	F		

COLORADO

Aspen Valley RC Club, Thomas A. Moore, Box 707, Aspen 81611	R
Boulder Aeromodeling Society, Dave Millard, 510 S. 43rd, Boulder 80303	M
Colorado Air Tragedy Society, John Wood, Jr., 8841 Pomone Dr., Arvada 80003	C
Flying Pirates, Thomas Kaster, Box 1711, Aspen 81811	R
Grand Junction Modelers, Warren E. Hoaglund, 2803 Mesa Grand Junction 81501	M
■ Springs Aeromodelers, Ken Shelter, 2412 Grand Ave., Glendale Springs 81801	M
Jalco Aeromodelers Club, Sharon Patrick 1876 S. Teller, Lakewood 80228	R
Magnificent Mountain Men, Don McGhee, 1280 Elm, Denver 80220	F
Mile Hi RC Club, Albert Burman, 285A Pontiac St., Denver 80220	R
Model Museum Flying Club, Roll O. Norstog, 11285 W. Kentucky Dr., Lakewood 80228	R
Pike Peak RC Club, Bill Tottle, 1707 Olympic Dr., Colorado Springs 80910	R
Sky Corral RC Club, John Carpo, 4019 Hillside Dr., Pueblo 81008	R
Snoopy's Squadron, Bob Weimer, 420 Euclid St., Ft. Morgan 80701	M

CONNECTICUT

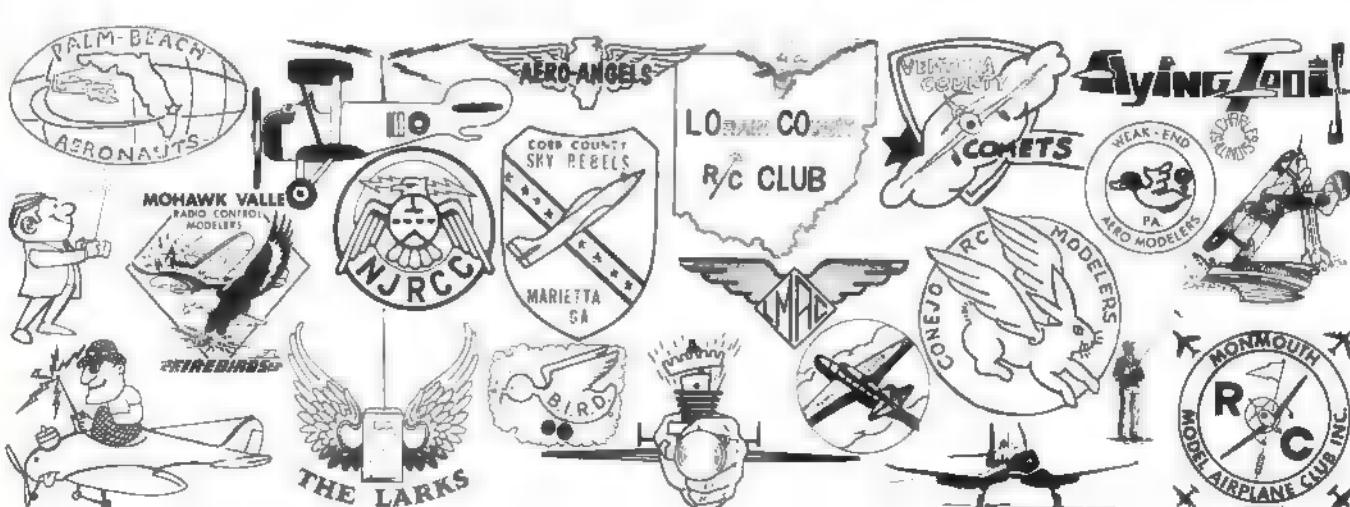
Bristol Hornets M.A.C., Charles Tice, 23 Manor ■, Plantsville 08479	M
Central Conn. RC Club, Robert Rich, 71 Dogwood Rd., Plainville 06062	R
Chaplin Airplane Modelers Soc., A. LeMieux, RFD #2, Back Road, Willimantic 06228	R
Conn Valley Club, Richard M. Sartori, 15 Harrison St., Windsor Locks 06098	R
County Squire Modelers, Keith R. Bergquist, 45 Lakeside Dr., Fairfield 06430	R
East Coast Swamp Flyers, Raymond ■ Moquet, 102 Enright St., W. Haven 06518	R
Fairfield League of Yankee RCers, B. Hyde, RR #1, Florida ■, Ridgefield 06877	R
Flying Aces Club, David ■ Stott, 86 Bankside St., Bridgeport ■	S
Glastonbury Aero Modelers, John T. Hodgkin, 42 Benton St., Winsted 06098	R
Middlesex Aero Modelers, Harold Berggren, ■ Harrison Dr., Cromwell 06418	R
Northeastern Drone Soc., Kent Williams, Apt. 3, South Road, Bolton 06040	R
Northern Conn. RC Club, Arthur R. Guelke, 44 Ridgewood Dr., Vernon ■	R
Nutmeg RC Flyers, John V. Rossi, 6 Longmeadow Dr., Ext., Wolcott 06718	R
NW Conn. RC Club, Thomas ■ Francis, Cathole Rd. (RR #1), Litchfield 06758	R
RC Club of Conn., Frank Baron, 84 Cobblers ■ Rd., Fairfield 06430	R
RC Prop Busters, Inc., James W. Parker, 17 West Main St., Niantic 06357	R
■ Runners RC Club of Conn., John R. Ambrosi, 158 Depot Rd., Milford 06460	R
Shoreline Miniature Aircraft Assn., J. Nilsson, 24 Homestead Pl., Branford 06405	M
Simsbury RC Club, H. Wainauski, P.O. Box 431, Simsbury 06070	R
Soc. of Antique Mod. Ch. 7, J. Whittles, 43 Farview Ave., Old Saybrook 06475	M
Southern ■ Aero Modelers Assn., R. Lipari, 955 Cove Rd., Stamford 06902	M
Trumbull RC Club, Howard A. Lenay, 2088 Huntington Tpke., Trumbull 06611	R
Valley RC Club, Frank Alcicando, 1 Skakorat St., Seymour 06483	R
Wallingford RC Association, Walter Demuck, Jr., 455 Broad St., Meriden 06450	R
Wintonbury Flyers Club, Raymond J. Bourquin, 8 Sharon Rd., Bloomfield 06002	M
Yankee Flyers of Conn., Paul J. Westerberg, Old Hall Rd., RR #1, Woodstock 06281	R

DELAWARE

Delaware RC Club, Inc., John M. Scott, 1408 Carson Rd., Wilmington 19803	R
Dover Mosquitos, John F. Harrison, R.D. Box 249, Goldsboro 21838	R
Flying Blue Hens, Gustave A. Shindel, 2432 Granby Rd., Wilmington 19810	R

DISTRICT OF COLUMBIA

See Maryland and Virginia listings



**FLORIDA**

Aeromodelers of Orlando, Jim Bradley, 4847 Headlee Dr., Orlando 32803	M
Aero Modelers of Perrine, David L. Woodin, 14401 Biscayne Dr., Homestead 33030	R
The Aeronauts, Philip Brown, 950 N.W. 97th Ave., Apt. 304, Miami 33126	M
Brandon Model Fliers, Zel Gibbs, 512 Brandon Blvd., Brandon 33511	R
Broward County RC Assn., Colbridge, 2849 88th Terr., Ft. Lauderdale 33309	M
Daytona Beach RC Assn., Byron II Trent, 2261 Granada Dr., S. Daytona 32019	M
Elgin Aero Modelers, Ronald E. Van Putte, 12 Longwood Dr., Shalimar 32579	M
ERMAC Englas, John A. Krutz, 76 Kenilworth Ave., Ormond Beach 32074	C
Fingercrackers, Gerald M. Ross, 1700 Pontiac Circle, S. Melbourne	M
Florida Tailspinners, Ron Smith, 125 Lucille Ave., Ft. Myers 33905	M
Flying Gators M.A.C., Charles E. Rice, 4821 4th Pl., Gainesville 32601	M
Gateway RC Club, Don Mobley, 8656 Valient Dr., Jacksonville 32210	R
Gold Coast Radio Controllers, Pete Murphy, 1242 NW 5th St., Boca Raton 33432	R
Gulf Hawk M.A.C., Roger Rowley, 1515 26th Ave., N., St. Petersburg 33704	M
Imperial RC Club, Inc., David R. Dewitt, 826 Park Hill Ave., Lakeland 33801	R
Indian River Kontrol Society, D.P. Tiffany, 545 Bahama Dr., Indian River 32903	F
Jacksonville FF Team, Francis J. Carney, 1839 Loyola Dr., Jacksonville 33218	R
Manasota RC Assn., Ronald R. Janssen, 111 Box 1033, Venice 33595	I
Miami Indoor Aircraft Model Assn., J. Martin, Jr., 3227 Darwin St., Miami 33133	M
Miracle Strip Modelers, R. Neudauer, 1123 Lindenwood Dr., Panama City 32401	M
Moonport Modelers, Jim Foch, P.O. Box 1214, Titusville 32780	M
Northwest Florida RC Modelers, Danny Hiller, R.R. 7, Box 831G-2, Pensacola 32506	R
Palm Beach Aeronauts, Inc., Fred A. Komroff, 725 Robin Way, N. Palm Beach 33408	R
Palm Beach Skyhawks, Robert Hasko, 144 Grandeur Dr., Palm Springs 33460	M
Pensacola Aeromodelers, Mae Fritz, 1005 Revere Dr., Pensacola 32505	F
Panacola Free Flight Team, Tom McLaughlin, 4140 Fern Ct., Pensacola 32503	R
RC Club of Jacksonville, Inc., 111 Hercum, 8844 Broward Rd., Jacksonville 32217	R
Remote Control Assn. of Cen. Fla., Sam Leonard, P.O. Box 792, Lake Mary 32746	R
Seminole RC Club, Roger W. May, 111 Great Lakes St., Tallahassee 32304	M
Southern Aerobatic Kontrol Soc., Dwight Baker, 226 11 Ln., Vero Beach 32960	M
Suncoast Aero Modelers, Inc., P. Strayer, 2337 Eastwood Dr., Clearwater 33515	R
Tampa Area Pilots Assn., Dennis Pemberton, 8826 Fountain Ave., Tampa 33614	R
Tampa RC Aircraft Club, Jack Diedrich, 2104 W Cluster Ave., Tampa 33604	R
Tampa Sky Kings, James M. Dees, 111 Box 1761, Lutz 33549	M
Tropic Aeras RC Club, Homer L. Barton, 3108 Indiana St., Miami 33133	R

GEORGIA

Albany Model Airplane Club, David T. Hartin, 2002 Beattie, Albany 31701	R
Athens Model Aircraft Club, John Cochran, 484 W. Cloverhurst Dr., Athens 30801	M
Atlanta Drone Society, James C. Easterday, 3311 Regalwood Dr., Doraville 30340	R
Atlanta RC Club, Inc., David E. Yeager, 5815 Only Terr., College Park 30349	R
Atlanta Sky Raiders Club, E.M. Gilleys, 4479 Orleans Ct., Chamblee 30341	C
Balsa Aerodynamics, David Diehl, 8120 Newick Dr., Columbus 31907	M
Central Ga. RC Aircraft League, J. Driver, 1524 Watson Blvd., Warner Robins 31093	R
Coastal Empire RC Society, Van A. Swindale, 3818 Oakland Ct., Savannah 31404	R
Cobb County Modelers Club, Ronald Reed, 918 Piedmont Ct., Marietta 30060	R
Cobb County Sky Rebels, Bob Stevenson, 281 Soulwood Dr., Marietta 30062	R
Columbus/Fort Benning RC Flyers Assn., C. Howard, 2719 10th Ave., Columbus 31904	R
CSRA Flyers, W. Glenn Fields, 2151 Kingsley Ct., Augusta 30908	R
Robins Model Flyers, C. J. Manspeker, P.O. Box 546, Warner Robins 31093	R
Savannah Prop Twisters, G. Long, 121 Suncrest Blvd., Talmi Is., Savannah 31404	C
South Dekab RC Club, Charles Williams, 2097 Rolling View Dr., Decatur 30032	R

HAWAII

Aloha Radio Control Club, Lou Cislo, 48 323 Kahwhipa St., Kaneohe 96744	R
Hanalei RC Club, Ernest Kuba, 50 Mamaki Pl., Hilp 96720	R
Hawaii RC Club, Ashman Wakaki, 1443 Keumeli Pl., Pearl City 96782	R
Kapiolani Radio Control Club, Leonard T. Onega, 98 280 Aiea Kai Pl., Aiea 96701	R
Kona RC Flyers, Michael Miranda, P.O. Box 1354, Kailua Kona 96740	R

**IDAHO**

Boise Area Radio Kontrol Soc., R. Seng, 8731 Brynwood Rd., Boise 83704	R
Coeur d'Alene Aeromodeling Soc., C. Haught, Rt. 2 Box 10, Coeur d'Alene 83814	M
Lewis Clark RC Club, Warren Yardley, 406 30th St., Lewiston 83501	R
Magic Valley Aeromodelers, John G. Jenkins, 684 Monte Vista, Twin Falls 83301	M
Palouse Ridge Runners, Gene Tucker, 737 Brent Dr., Moscow 83843	M
Pocatello Glue Angels, Lucia K. Diegel, P.O. Box 2307, Pocatello 83201	M

ILLINOIS

Aero Angels, Inc., Irvin Zick, 5042 W. Altegeld, Chicago 60639	C
Aero Bats M.A.C., Charles P. Puckett, 213 Grant St., Mt. Vernon 62854	M
Aero Sport RC Club, William G. Grove, 934 Holly Way, Palatine 60067	R
Aero Telemechanics, John I. Burns, Jr., 827 S. East Ave., Oak Park 60304	R
Barb City Modelers, Rodney Pluister, 916 Huffman Ct., Oak Park 60115	M
Belleview RC Flyers, Gane H. Bell, 208 N. 48th St., Belleville 62223	R
Champaign County RC Club, William R. Mathews, 1727 Anita Dr., Champaign 61820	C
Champaign-Urbana Aeronauts, John L. Laws, Box 191, Hindsboro 61930	R
Checkerboard Field RC Club, J. Petrelka, 2400 111st Ct., Cicero 60650	R
Chicago Aeronauts, Pete J. Sojich, 3851 W. 82nd Pl., Chicago, IL	F
Chicago Aero Commanders RC Club, Jerry Bayless, 1313 W. Main, Decatur 62522	R
Decatur Aero Commanders RC Club, Jerry Bayless, 1313 W. Main, Decatur 62522	R
Decatur Blunder Birds, Inc., Wm. Clark, Box 551, Warrensburg 62573	R
Dekalb Cloud Dusters, Dutch Hess, 137-1/2 E. Lincoln, Dekalb 60115	F
East Side RC Club, Robert K. Hintz, 19 Georgetown Dr., Granite City 62040	R
Flying Fools M.A.C., M. Madson, 5848 S. Brainard Ave., LaGrange, 60525	M
Four Knights Flying Team, Alvin Urban, 248 S. Milton, Glen Ellyn 60137	R
Fox Valley Falcons, Gary Durham, 30 W. 085 Bruce Ln., Naperville 60540	M
Fox Valley RC Squadron, Robert Stricker, R.R. #1, 7 Hawthorne Dr., Oswego 60543	R
Freeport M.A.C., H. James Hanke, 815 W. Hamilton St., Freeport 61032	M
Hoffman's Heroes, Doug Sampson, 866 S. Fletcher, Wheeling 60090	M
Illinois Aero Club, David Miller, 18017 Wildwood, Lansing 60438	F
Illinois Valley Club, Elmer Eggers, 1709 Baker St., Streator 61384	R
Intrepid Bird, Carl P. Audo, 106 1/2 6th St., St. Joseph 61873	M
Joliet RC Club, Bernard J. Vidano, 1115 Waverly Pl., Joliet 60435	R
Kankakee Valley Model Flyers, A.G. Zoph, R.R. #1, Box 310, Kankakee 60901	M
Kishwaukee RC Flyers, Fred Sassman, 931 18th St., Rochelle 61068	R
Lake Shore RC Club, H. Trepp, Jr., 928 S. Arlington Hts., Arlington Hts. 60005	R
Lilly Lake Air Knockers, Wayne F. Morrison, RR 1, Box 218, St. Charles 60174	M
Lincoln Trail RC Flying Club, James D. McKee, 901 S. King St., Robinson 62454	R
NAL Barnstormers, Mark Kiboku, 160 May St., W. Chicago 60185	R
Naperville Barnstormers, Patrick Angstan, 857 W. Douglas St., Naperville 60640	M
Northwest RC Club, David J. Heller, 835 N. Dunton Ave., Arlington Hts. 60004	R
Okaw Valley RC Club, Donald L. Hines, 201 Grandview St., Paris 61944	R
Palos Park RC Club, Martin L. Tew, 3330 W. 100th St., Evergreen Park 60652	R
Pegasus RC Society, Howard C. Kubsch, 118 Thornhurst Rd., Bolingbrook 60439	R
Pekin RC Club, Norman C. Harvey, 207 Third St., S. Pekin 61564	R
Peoria RC Modelers, W.E. Little, 404 Washington, Tremont 61568	R
Propkickers Model Club, John Althoff, 1704 Nita Ln., Jacksonville 32207	M
Prop & Wing Club, Little F. Spudz Hobby Center, 2303 Grand Ave., Waukegan 60085	M
Quincy Flying Falcons, Lloyd T. Boden, Jr., 705 Monroe St., Quincy 62301	R
Radio Controlled Sport Flyers, Larry Drake, 956 10th St., Charleston 61920	R
Rantoul Prop Busters Club, George Stanly, 45 Kierna Dr., N. Rantoul 61888	M
RC Club of Chicago, S. Szymkowksi, 14220 LaSalle St., Riverdale 60627	R
Barons M.A.C., Harold L. Britton, 330 Pine St., Deerfield 60015	M
Rockford Aeromodelers, Norbert L. Russell, 709 Lafayette Ave., Rockford 61107	C
Rock Valley RC Flyers, Lawrence Alex, 720 Whitman St., Belvidere 61108	R
S.O.A.R. Dave Burt, 3048 Central St., Evanson 60201	R
Sky Knights Aeromodeling Team, Milton Spoor, 249 W. Russell St., Barrington 60010	M
Sky Larks, Herman Landon, 741 S. Burton, Arlington Hts. 60005	R
Sky Squires, Jacob Bach, 10 Hillcrest Dr., Carbondale 62901	R
Springfield Sunday Flyers Club, Inc., M. Towsley, P.O. Box 805, Riverton 62581	R
Suburban Aero Club of Chicago, Bruce Parry, 3415 218th St., Matteson 60443	R
Thorn Creek, Robert Barnes, 18818 Henry Ct., Lansing 60438	R
Treetown Modelers, Al Stone, 600 Tonne Rd., Elk Grove Village 60007	M
Tri City Sky Steelers, Inc., John D. Blum, 2417 Glen Pl., Granite City 62040	M
Tri Village RC'ers, Lyle Bohn, 454 Tulsa, Carpentersville 60110	R
Vermilion County RC Club, Bill Powell, 313 Ridgeview, Danville 61832	R
West Suburban RC'ers, Antunes, 303 E. Myrick Ave., Addison 60101	R
Woodland Aero Modelers, David J. Haertel, 430 Lake Ave., Downers Grove 60515	M

INDIANA

Central Indiana Aeromodelers, Guido Speedy, 4940 Fletcher St., Anderson 46014	F
Columbus Model Club, Russell Kuhn, 525 Cleveland St., Columbus 47201	M
Converse Flying Club, Jerome A. Rosman, 228 E. 50th St., Marion 46952	R
Dekab Flying Models Club, Richard Barber, 711 Tecumseh Ct., Auburn 46708	M
Eastern Indiana RC Assn., David Marquis, #3, Richmond 47374	R
Evansville RC M.A.C., Carl R. Jarvis, 1628 E. Blackford, Evansville 47714	R
Ft. Wayne Flying Circuits, Jim Geget, 3727 Shepherd St., Fort Wayne 46815	R
Griffith Barnstormers, Adriana Wright, 231 N. Jay, Griffith 46319	M
Hamilton Flying Modelers, Paul Bennett, 5745 Susan Dr. II, Indianapolis 46250	R
Indianapolis RC Modelers, Louis Schmalz, 8624 E. Rales Ave., Indianapolis 46219	R
Indpls. RC South, C. Leverenz, 622 Turtle Creek Dr., N., Apt. 9, Indianapolis 46227	R
Indpls. West Side RC Modelers, Inc., J. Blacker, 2, Box 88A, Brownsburg 46112	R



The Indy Sportliner Club, Paul Patterson, 1943 Calhoun Ct., Indianapolis 46203	C
Knightstown RC Club, Richard L. Waits, 104 S. Madison St., Knightstown 46148	M
Kokomo Blue Angels, Richard Weeks, 5709 Peshewa Ct., Kokomo 46901	R
Lafayette Cloud Jockeys, Ralph E. Ramsey, 223 Main St., Lafayette 47901	M
Lapel Flying Modelers, Charles H. Gilmore, 1629 Orchard Ln., Anderson 46011	R
Lebanon Aeronuts, Raymond Padgett, RR #2, Ratsburg Rd., Lebanon 46052	R
Logansport Thunderbirds, Eugene Hanawalt, 3124 Fairview Ave., Logansport 46947	R
Madison County RC Flyers, Jerry Payton, 801 W. Washington St., Alexandria 46001	R
Marian Model Menders, Charles R. Bragg, Sr., 1092 S. 525 E., Marion 46952	M
Monroe Co. RC Club, Inc., D. Friesel, RR #8, Shields Rd., Bloomington 47401	M
Muncie Controlers, Kenneth L. Foster, 320 Willow Rd., Muncie 47304	R
Munsee Skychiefs RC Club, Gary Bussell, 4900 Connie Dr., Muncie 47304	R
N. Ind. Model Aeronautics Assn., F.E. Nevin, 4637 Taney Pl., Gary 46406	R
North Liberty RC Club, Thomas E. Oaks, 206 Williams St., N. Liberty 46554	R
Pelican MAC, Timothy Banaszek, 1947 Superior Ave., Whiting 46394	F
Screaming Eagles RC Club, William Rogenstein, 115 Hickory Rd., Brownsburg 46112	R
Sky Knights, Larry Hirstein, 606 E. Broad, Nappanee 46550	M
S. Ind. RC Modelers, Dale Arvin, 619 Spicewood Dr., Jeffersonville 47130	M
Terre Haute RC Club, Edward A. Ica, 1208 N. 15th St., Terre Haute 47807	R
Tri County Aero Club, Pat English, 823 Broadway, Vincennes 47591	M
Tri Valley RC Club, Robert J. Stewart, 1142 E. Altgeld St., South Bend 46614	R
Wabash Valley RC Club, Robert Swing, 530 W. Third St., Peru 46870	R
Warsaw Aero Modelers, Allen Hartman, 1315 E. Ft. Wayne St., Warsaw 46580	M
Whitewater Valley RC Club, David A. Marquis, #3, Richmond 47374	R

IOWA

Balsa Busters Club, D.K. Hutcheson, 317 Spencer Ave., Council Bluffs 51501	C
Black Hawks RC Pilots, Inc., Ed Harris, 1207 W. 19th St., Cedar Falls 50613	R
Burlington Model Airplane Club, Robert Mueller, 915 W. 10th St., Burlington 52601	M
Castor Oilers, Kent S. Gallagher, 3210 18th St., Bettendorf 52722	C
Ceder Rapids Skyhawks, D.M. Lewis, 2215 12th Ave., Marion 52302	M
Central Iowa Aeromodelers, Frederic L. Miller, 2417 47th St., Des Moines 50310	M
Davenport M.A.C., Inc., Richard Mairé, 3009 Westmar Dr., Bettendorf 52722	M
Des Moines Modelaires, Gwen McClure, 5703 Terrace Dr., Des Moines 50312	R
Dodge RC Club, E.M. Milenborg, 1278 7th Ave., N., Ft. Dodge 50501	R
Iowa City Aero Hawks, Michael E. Valdez, P.O. Box 622, Iowa City 52240	R
Iowa City RC Club, J.R. Warner, 810 S. Dubuque St., Iowa City 52240	R
Muscataine Miniature Aircraft Assn., K. Morris, 404 Park Ave., Muscatine 52761	M
Muscataine RC Unlimited, William C. Gremmels, 2801 Highland Ct., Muscatine 52761	R
River City Radio Control, Donald Fuller, 201 S. Vermont, Mason City 50401	R
Tri County RC Modelers, Howard Klahn, 500 W. 20th St., Carroll 51401	R

KANSAS

Balsa Buzzard's, Douglas Litke, 1509 8th St., Clay Center 67432	
Capital City RC Club, Fred Dibble, 3621 Windsor, Topeka 66004	M
Hi Plains RC Club, Lester Rogers, Box 133, Jetmore 67854	R
Jayhawk Modelmasters, Paul W. Burton, 1339 Engel Rd., Lawrence 66443	M
Johnson County Aeronauts, William G. Marsh, 8880 Farley, Overland Park 66212	M
Kansas Sun Flyers, Lynn J. Folkerts, Timken 67582	M
Knucklebusters, Robert Hill, P.O. Box 393, Shawnee Mission, 66201	M
Mid America RC Society, James W. LaCamp, 1708 Hickory, Salina 67401	R
Safina Accurate Flying Eagles, Donald Moden, 410 Hart St., Salina 67401	R
Shawnee Mission RC Club, Inc., Dennis H. Brown, 5148 Lucille Ln., Shawnee 66203	R
Wichihawks M.A.C., Bud Burroughs, 4557 S. Sycamore, Wichita 67217	M
Wichita RC Club, Morris Wiant, 820 Flora, Wichita 67212	R

KENTUCKY

Central Kentucky RC Club, Warren W. Davis, 641 Rosewood Dr., Lexington 40505	R
Confederate RC Air Force, Thomas McGill, 1327 Amsterdam Rd., Covington 41011	R
The Knox Model Airplane Club, S. Panter, 5745-A Allison Ave., Ft. Knox 40121	R
Lexington M.A.C., William Suvanto, 1117 Seven Pines, Lexington 40505	M
Louisville RC Club, Inc., John V. Frank, Jr., 5311 Random Way, Fern Creek 40291	R
Paducah Aero Modelers, Kenneth E. Johnson, 151 Iroquois Dr., Paducah 42001	M
Southern Kentucky RC Club, Paul Rush, Rt. 8 Box 138 Happy Cir., Somerset 42501	R
Syntonic Aero Club, Inc., Ronald Suhre, 8 Avon, Ft. Thomas 41075	R

LOUISIANA

Acadian RC Club, John Melancon, Rt. 1 Box 458, Breaux Bridge 70501	R
Chalmette RC Club, Dexter Denton, 2909 Ventura Dr., Chalmette, 70043	R
Dyna Soars M.A.C., Alton F. Seither, Jr., 7520 Weaver Ave., New Orleans 70127	F
Lake Area Radio Kontrol Soc., Fred T. Henrich, 104 Ann Ave., Sulphur 70663	R
N.O. Miniature Aircraft Club, D.J. Bird, Sr., 4900 Donna Dr., New Orleans 70127	M
Greeans East Flying Club, Louis J. Burg, 4711 Lancelet Dr., New Orleans 70127	M
Polk Aero Modelers, D. Field, McManus Trailer Pk. #16, Rt. 2, Laesville 71446	M
St. Bernard RC Flying Club, Frank J. Mammelli, 2708 Volpe Dr., Chalmette 70043	R
Shreveport Area RC Soc., Thomas Debbins, 302 Oianne Cir., Bossier City 71010	M
Shreveport Sky Demons, David L. Nicholas, 2714 Sunnybrook St., Shreveport 71108	M
Tri Parish RC Club, Dale D. Griffith, 1221 Ellerslie Ave., LaPlace 70068	R

MAINE

Eastern Maine RC Gulls, Ray E. Gibouleau, Stillwater Ave., Dorno 04473	R
Kennebunk Valley RC Club, Frank N. Rinde, 74 Newland Ave., Augusta 04330	R
Moosehead Bushpilots RC Club, Axel Kurth, Airport, Greenville 04441	R
Pine Tree Aeromodelers, George MacArthur, 22 Orlando St., S. Portland 04108	M
Propsnappers Inc., Howard J. Kennedy, Jr., RFD #3, Gorham 04038	R
Radio Control Sport Modelers, Robert L. Rowland, 19 Winslow Ct., Bath 04530	R

MARYLAND

Aeromasters M.A.C., Wm. Firesheets, Sr., Rt. #1, Box 1990, Severna Park 21146	M
Baltimore Aero Craftsmen M.A.C., Howard Weil, 3808 Monterey Rd., Baltimore 21218	F
Balt. Model Aircraft Soc., H. Reckling, III, 3301 Powhatan Ave., Baltimore 21216	M
Charles County RC Club, R.W. Perry, 8703 Clarion Ct., Washington, D.C. 20022	M
Chesapeake Bay RC Club, Inc., G. Chambers, 1133 McHenry Dr., Glen Burnie 21081	R
Comsat Aero Modelers, Robert W. Cool, 19104 Aldenham Ct., Germantown 20787	M
Cumberland Aircraft Model Soc., D. Mansmann, 115 Winslow St., Cumberland 21502	M
D.C. Executives, Victor Boswell, Jr., 35 H Ridge Rd., Greenbelt 20770	F
D.C.R.C., Inc., William B. Cavanaugh, 10892 Green Mountain Cir., Columbia 21044	R
Flite Streaks, Michael Sanders, 9752 Conner Rd., Baltimore 21220	M
Frederick M.A.C., Inc., John E. Patton, Route 5, Frederick 21701	M
Meade Modelers, Richard W. Hughes, 947 Summer Hill Cir., Gambrills 21054	R
Mid Atlantic RK Soc., Inc., G. Walters, 2820 Middleford Rd., Seaford (Del.) 19973	R
Patuxent Aeromodelers, D. Mitchell, 1519 D Memq. N.A.S., Patuxent River 20870	M
Pegasus M.A.C., Robert R. Enterline, 1045 Woodland Way, Hagerstown 21740	R
Prince Georges RC Club, Pat Murphy, 10402 Tenbury St., Upper Marlboro 20870	R
RC Modelers of Baltimore, Inc., James Green, Box 116, Rt. 2, Phoenix 21131	R
Salisbury Hawks, C. Herbert Clough, Box 72, Parsonsburg 21849	M
Sky Lancers of Washington, D.C., R. Greene, 1212 Highwood Rd., Rockville 20851	C
Southern High School M.A.C., Richard C. Pratt, Franklin Manor, Churchton 20733	M
Westminster Aero Modelers, Robert S. Pease, 65 E. Main St., Westminster 21157	M

MASSACHUSETTS

Berkshire CL Flyers, James Armstrong, 20 Webster St., Somerville 02145	C
Berkshire RC Flying Club, Roy Willey, 798 Williams St., Pittsfield 01201	R
Cape Ann RC Model Club, Paul Penney, B Charlotte Dr., Andover 01810	R
Charles River Radio Controllers, F.M. O'Brian, 14 Howard St., Holliston 01748	R
Hampshire County Radio Controllers, L. Waddle, 233 Wisdom Way, Greenfield 01301	R
Merrimac Valley Air-Istocrats, K.K. Barrett, 101 Greenfield St., Lawrence 01843	M
New England Aero Team, Norman E. Lavigne, 184 Washington St., New Bedford 02740	M
New England RC Modelers, M.H. Olson, 10B Brandywine Dr., Shrewsbury, 01545	R
New England Wakefield Group, Stanley V. Colson, 47 Sammet St., Everett 02149	F
Northshore Model Aircraft Assn., David Reagan, Jr., 11 Ridgeway Ct., Lynn 01902	M
Pioneer Valley RC Club, Calvin Phillips, 91 Raymond Circle, Agawam 01061	R
Precision Modelers Assn., Arnold Sherman, 27 Smith Rd., Randolph 02388	M
Quinapoxet Model Flying Club, Edward Eaton, 910 Wachusett St., Holden 01520	R
South Shore RC Club, Robert Strang, 36 Richards Rd., Watertown 02172	R
Springfield Area RK's, Robert H. Amy, 12 Cranwell Ln., Longmeadow 01108	M
Valley Thunderbirds, Bernard V. Gaudette, 155 Elm St., E. Longmeadow 01028	M
495th M. Squadron, C. Nealon Stark, 4 Hostler Rd., Chelmsford 01824	R

MICHIGAN

Aero RC Club, Inc., Theodore W. Laduke, 7460 Lahring Rd., Gaines 48436	R
Ann Arbor RC Falcons, Thomas J. Mitchell, 811 N. Mansfield, Ypsilanti 48197	R
Battle Creek Balsa Bees M.A.C., J. Watters, 31 W. Minges Rd., Battle Creek 49017	M
Brighton RC Club, John P. Kustrila, 9491 Galatian Dr., Whitmore Lake 48189	R
Capital Area Radio Drone Squadron, M. Stevens, 1610 Gordon Ave., Lansing 48910	R
Davison Hill Toppers RC Assn., Inc., John L. Hoover, 1476 McEwen, Flint 48503	R
Detroit Balsa Bugs, Inc., Walter T. Hartung, 14759 Kilbourne Ave., Detroit 48213	F
East Wings Model Club, Joseph Svatora, 27240 W. Crestmont, Roseville 48066	R
Flying Robots, Peter B. Klenk, 24651 Colgate, Dearborn Heights 48127	R
Flying Wolverines, Calvin Satawa, 31117 N. River Rd., Mt. Clemens 48043	R
Goodwin Hobbies RC Flying Club, F. Pulte, 1545 Iowa St., SW, Wyoming 49509	R
Greater Detroit Soaring & Hiking Soc., W. Tiaht, 1086 Ashley, Troy 48084	R
Greater Flint RC Club, Inc., Clark D. Maher, 4120 Le Ezra, Flint 48504	R



G.R.I.M.E.S., William Driftmeyer, 1963 Galewood, S.W., Wyoming 49509	M
Indian City RC Club, Joseph Korzetz, 4025 17th, Wyandotte 48192	R
Jackson RC Club, Billy II. Borland, 3125 Lorrie Dr., Spring Arbor 49283	R
Kalamazoo Kamikazi's M.A.C., Allen C. Smith, C R 665, Rt. 2, Paw Paw 49079	M
Kent Radio Aero Modelers, Robert Kok, 5168 Pleasant Cr., Comstock Park 49321	R
Lansing Flying Aces, Robert V. Smith, 801 W. Shiawassee St., Lansing 48915	M
Livonia Rib Crackers M.A.C., George E. Lemieux, 36316 Dardanelle, Livonia 48152	R
Michigan RC Society, Barry H. Killick, 44139 Marlboro, Novi 48125	R
Midwest RC Society, James W. Cross, 31808 Ann Arbor Trail, Westland 48185	R
Pontiac M.A.C., James Burns, 2100 Oakdale, Drayton Plains 48020	M
Port City RC'ers, Larry Zadonick, 1470 Norton #12, Muskegon 49441	R
RC Club of Detroit, Robert Gavagan, 13989 Fulton Rd., Capac 48014	R
Saginaw Sudbusters, Richard Pacini, 2720 W. Auburn, Saginaw 48601	C
Saginaw Valley RC Club, Jim Lindemuth, 9815 Swan Valley Dr., Saginaw 48603	R
Signal Seekers RC Club, Wayne W. Yaeger, 6323 N. Wayne R., Westland 48185	R
Slap Neck RC Club, John Lingrel, 505 Strato Cruiser, K.I. Sawyer A.F.B. 49843	R
Strathmoor Model Club of Det., L. Rykiersky, 7787 Archdale Ave., Detroit 48228	R
Tel Star Flying Stars Model Craft Club, R. Boucke, 10039 Nottingham, Detroit 48224	M
Thunderbirds Battle Creek M.A.C., D. Sootsman, Rt. 1, Box 1918, E. Leroy 49051	M
Whirlwinds of W Michigan, W. Hannah, 6715 Red Arrow Hwy., Stevensville 49127	M
Ypsi Hobby Club, Jimmy Moore, 1151 Nash Ave., Ypsilanti 48197	M

MINNESOTA

Central Minnesota RC'ers, Kenneth Bents, 1910 10th Ave., S., #4, St. Cloud 56301	R
Duluth RC Club, Donald J. Fawcett, 520 N. 82nd Ave., W., Duluth 55807	R
Mankato Modelers, SFC Jerry B. Caldwell, P.O. Box 165, Mankato 56001	M
Minneapolis Model Aero Club, R. Hilgeman, 7228 3rd Ave., S., Minneapolis 55423	F
Minneapolis Piston Poppers, M. Parenteau, 67111 75th Ave., N., Minneapolis 55428	E
Rochester Aero Model Soc., Ken Mann, 425 15th Ave., S.W., Rochester 55901	R
St. Paul RC Model, Inc., D. Johnson, 1325 97th Ave., N.W., Coon Rapids 55433	R
Twin City RC'ers, Inc., Donald Heywood, 6811 Elliot Ave., S., Minneapolis 55423	R

MISSISSIPPI

Capital City RC Club, Frank Rustic, 614 Brandon Ave., Jackson 39209	R
Columbus Prop Busters, Herbert Hanson, 285 Air Base Trailer Pk., Columbus 39701	M
Flying Bulldogs M.A.C., Will T. McKie, Jr., Box 433, Mississippi State 39762	M
Gulf Coast L.A.R.C.S., Hollis Taylor, 2221 Gregory, Gulfport 39501	M
Magnolia Flyers, Dudley Kinard, Box 463, Petal 39465	R
Meridian RC Club, Julie Woods, P.O. Box 127, Scooba 39358	R
Singing River Modelers, Nathan W. Davis, 3307 Basswood, Pascagoula 39567	M
Small Aircraft of Picayune, Ken Cashion, 235 Tennyson Cove, Picayune 39466	M

MISSOURI

AVSCOMPARAS, G. Williams, 404 Old Meramac Sta. Rd., Manchester 63011	R
Eagles RC Glider Club, Gene Klotz, Jr., 1485 St. Michael, Florissant 63033	R
Freelancer RC Club, Danny Embree, 820 Cedar St., Poplar Bluff 63901	R
Hot Heads M.A.C., Inc., William J. Rech, 10821 St. Xavier Ln., St. Ann 63074	M
Joplin RC Model Club, Jack Spiker, 221 N. Gray St., Joplin 64801	R
Kansas City RC Assn., John Ritter, 8809 Hawthorne, Raytown 64138	R
Kansas City Super Tigers, Dave Trible, 7201 E. 104th St., Kansas City 64134	M
KC Northern Knights M.A.C., G.R. Berg, 1865 NW 68th St., Kansas City 64118	M
Kirkwood Thermaleers, David J. Haudrich, 1119 Port Diane Dr., Creve Coeur 63141	F
Lafayette Esquadille, August E. Vogel, Jr., 703 Connor Ln., Manchester 63011	M
McDonnell FF, James H. Bennett, 324 Heffenstein Ave., St. Louis 63119	F
McDowell RC Club, James T. Mayes, Jr., 1616 Green Hill Dr., St. Louis 63141	R
McDonnell Throttlemasters M.A.C., B. Johnson, 2504 Charwood, St. Charles 63301	C
Mid Mo. RC Assn., R. Palmer, 95 Great Hills Trl. Ct., Rt. 10, Columbia 65201	R
Mo Kan Modelers Assn., Bill Wright, 2815 Collin, Independence 64052	M
St. Charles Phantom Flyers, Inc., E. Gross, 431 Vine St., O'Fallon 63366	M
St. Joseph RC, Richard Drodz, 2401 Big Pine Terr., St. Joseph 64503	R
St. Louis Yellow Jackets, Inc., A. Schaefer, 4206 Virginia Ave., St. Louis 63111	M
Signal Chasers RC, Marvin G. Hart, 936 Dantons Dr., St. Louis 63131	R
Sky Devils M.A.C., James E. Dunkin, 10411 E. 30th Terr., Kansas City 64133	C
Spirits of St. Louis RC Club, J. Lunt, 801 Edgar Rd., Webster Groves 63119	R
Springfield Balsa Busters, R. Cameron, Rt. 12, Box 150-166, Springfield 65804	R
Sunchasers RC Club, Ruth Allen, 300 E. Armour Apt. 501, Kansas City 64109	R

MONTANA

Big Sky Modelers, Gerald H. Happe, 1421 20th Ave., S., Great Falls 59405	R
Billings Flying Mustangs, George D. Vaughan, 2910 Terry Ave., Billings 59102	R
Blue Mountain Aero Modelers, William G. Barba, 2603 View Dr., Missoula 59801	M
Bozeman Air Tragedy Society, David Shema, 114 S. 9th Ave., Bozeman 59715	M
Helena Flying Tigers, Franklin C. Flynn, 141 Briarwood Ln., Helena 59601	R

See April issue (next month) for clubs in Nebraska, Nevada, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, Washington, West Virginia, Wisconsin, Wyoming, APO and foreign.

Contest Calendar

Official Sanctioned Contests of the Academy of Model Aeronautics

Feb. 1-3—Akron, Ohio. 8th Annual Chapel Hill Show for Static Display & Flying Demonstrations. Site: Chapel Hill Mall, J. Yarger CD, 1100 Browning Ave., N. Canton, Ohio 44720. Sponsor: Goodyear Model Aircraft Club.	
Feb. 3—Green Bay, Wisc. (A) Annual Polar Bear FF (Cat. I) Meet. Site: Frozen Green Bay. II. Cowles, Jr. CD, 2424 Ducharme Ln., Green Bay, Wisc. 54301.	
Feb. 3—Tacoma, Wash. (AA) Misery FF (Cat. II) Meet. Site: Herts Lake Prairie. D. Zipoy CD, 264 169th, Bellevue, Wash. 98008.	
Feb. 4—Brooklyn Park, Minn. (A) Super Peanut & Scale 1st Annual Meet. Site: North View Jr. High, L. Schander CD, 1402 Jefferson St., NE, Minneapolis, Minn. 55413.	
Feb. 17—Plymouth, Mich. (A) 4th Annual Sno-Fly Great Det. S & H RC Meet. Site: Plymouth. A. Siegle CD, 26314 Kiltartan, Farmington, Mich. 48024.	
March 18-17—Snohomish, Wash. (AA) Polar Bear RC Meet. Site: Snohomish P. Williams CD, 5803 East Dr., Everett, Wash. 98203. Sponsor: Seattle Radio Aero Club, Inc.	
March 23—Locust Valley, N.Y. LIAMAC Indoor (Cat. II) Record Trials. Site: Friends Academy J. Palet, CD, 30 Emerson Rd., Brookville, Glen Head, N.Y. 11545.	
March 23-24—San Antonio, Tex. (AA) A.R.C.S. Spring RC Contest. Site: San Antonio D. Bottoms CD, 3329 Fredericksburg Rd., San Antonio, Tex. 78201.	
April 21—Phoenix, Ariz. (AA) Spring FF (Cat. I) Contest. Site: Pinnacle Peak Rd. & 37th Ave. W. Morris CD, 7422 E. McKinley St., Scottsdale, Ariz. 85257.	

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TR Team Change

For personal reasons, the team of J. E. Albritton and Jim Joy has withdrawn from the U.S. Team Racing World Championships team; the runner-up team of Max Mearns and Henry Nelson (Verona, Pa.) has been offered the vacancy. Other Team Race team members are Hodgkins/McCollum (Santa Ana, Calif.) and Fischer/Oesterle (Bronx, N.Y.).

U.S. Control Line World Championships teams for Team Race, Speed and Stunt were selected in an AMA program which concluded in a Team Finals at St. Louis over the 1973 Labor Day weekend. The U.S. Speed team consists of Chuck Schuette (Santa Monica, Calif.), Bob Spahr (Thousand Oaks, Calif.) and Robert Heminway (Pennsauken, N.J.). On the Stunt team are Bob Gieseke (Irving, Tex.), Gene Shaeffer (Astoria, N.Y.) and Bill Werwage (Berea, Ohio).

The CL World Championships is slated to be held July 24-29 this year in Czechoslovakia.

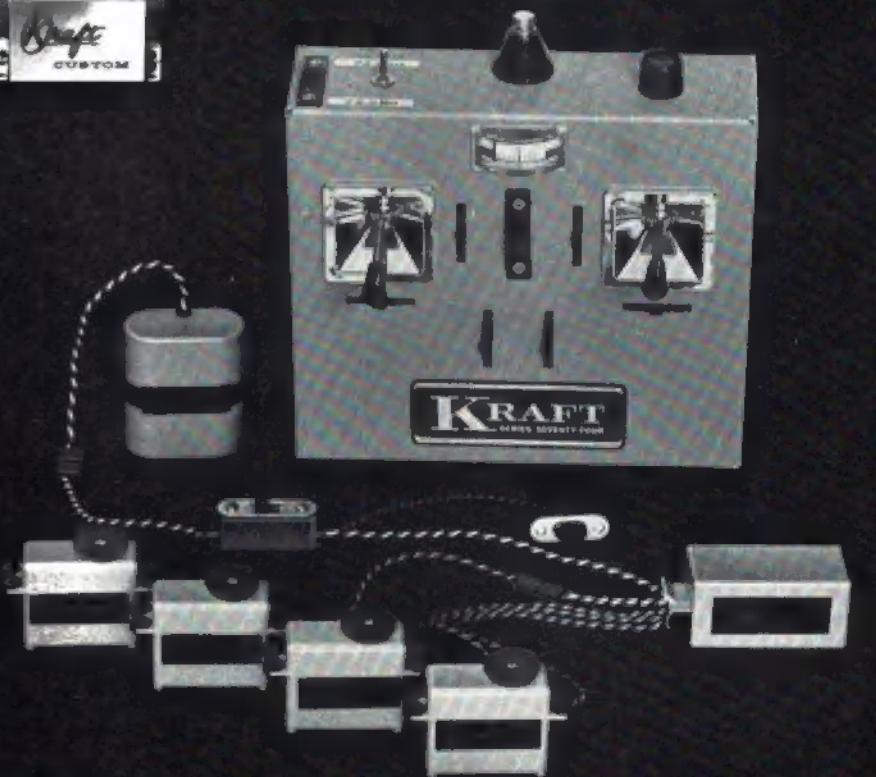
Chartered club officers who receive the *AMA Monthly Mailing* found out in January what was January's big modeling news. Did you? If not, ask your officers why not!

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